

# SEQUENCE LISTING

#6

<110> Hardiman, Gerard T.  
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Bazan, J. Fernando  
Kastelein, Robert A.  
Ho, Stephen W.K.  
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<120> RECEPTOR PROTEINS; RELATED REAGENTS AND METHODS

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<170> PatentIn version 3.1

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Thr Phe Ser Lys Glu Gln Leu Asp Ser Phe His Thr Leu Lys Thr Leu	
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Asp Val Arg Leu Ser Val Ser Glu Cys His Arg Thr Ala Leu Val Ser	
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Cys His Arg Phe His Gly Leu Trp Tyr Met Lys Met Met Trp Ala Trp	
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atc att gac tcc att gaa aag agc cac aaa act gtc ttt gtg ctt tct	2112
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Glu Leu Tyr Ile Ser Arg Asn Lys Leu Met Thr Leu Pro Asp Ala Ser	460		465		470	
Leu Leu Pro Met Leu Leu Val Leu Lys Ile Ser Arg Asn Ala Ile Thr	475		480		485	490
Thr Phe Ser Lys Glu Gln Leu Asp Ser Phe His Thr Leu Lys Thr Leu	495		500		505	
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Tyr Asp Ala Phe Val Ser Tyr Ser Glu Arg Asp Ala Tyr Trp Val Glu	620		625		630	
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Lys	Leu	Pro	Met	Leu	Lys	Val	Leu	Asn	Leu	Gln	His	Asn	Glu	Leu	Ser		
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Gln	Leu	Ser	Asp	Lys	Thr	Phe	Ala	Phe	Cys	Thr	Asn	Leu	Thr	Glu	Leu		
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Trp	Thr	Asn	Leu	Thr	Met	Leu	Asp	Leu	Ser	Tyr	Asn	Asn	Leu	Asn	Val		
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Cys Leu Arg Arg Gly Met Phe Lys Ser His Cys Ile Leu Asn Trp Pro	
845 850 855	
gtt cag aaa gaa cgg ata ggt gcc ttt cgt cat aaa ttg caa gta gca	2688
Val Gln Lys Glu Arg Ile Gly Ala Phe Arg His Lys Leu Gln Val Ala	
860 865 870 875	
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Glu Val Ala Asp Cys Ser His Leu Lys Leu Thr Gln Val Pro Asp Asp	
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Leu Pro Thr Asn Ile Thr Val Leu Asn Leu Thr His Asn Gln Leu Arg	
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Asp Val Gly Phe Asn Thr Ile Ser Lys Leu Glu Pro Glu Leu Cys Gln	

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Gln	Leu	Ser	Asp	Lys	Thr	Phe	Ala	Phe	Cys	Thr	Asn	Leu	Thr	Glu	Leu
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His	Leu	Met	Ser	Asn	Ser	Ile	Gln	Lys	Ile	Lys	Asn	Asn	Pro	Phe	Val
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Lys	Gln	Lys	Asn	Leu	Ile	Thr	Leu	Asp	Leu	Ser	His	Asn	Gly	Leu	Ser
	125					130					135				
Ser	Thr	Lys	Leu	Gly	Thr	Gln	Val	Gln	Leu	Glu	Asn	Leu	Gln	Glu	Leu
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Leu	Leu	Ser	Asn	Asn	Lys	Ile	Gln	Ala	Leu	Lys	Ser	Glu	Glu	Leu	Asp
			160						165					170	
Ile	Phe	Ala	Asn	Ser	Ser	Leu	Lys	Lys	Leu	Glu	Leu	Ser	Ser	Asn	Gln
			175					180					185		
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Asn	Ser	Gln	Leu	Ser	Thr	Thr	Ser	Asn	Thr	Thr	Phe	Leu	Gly	Leu	Lys
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Trp	Thr	Asn	Leu	Thr	Met	Leu	Asp	Leu	Ser	Tyr	Asn	Asn	Leu	Asn	Val
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Val	Gly	Asn	Asp	Ser	Phe	Ala	Trp	Leu	Pro	Gln	Leu	Glu	Tyr	Phe	Phe
		270					275					280			
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Ser Ile Ser Leu Ala Ser Leu Pro Lys Ile Asp Asp Phe Ser Phe Gln  
320 325 330

Trp Leu Lys Cys Leu Glu His Leu Asn Met Glu Asp Asn Asp Ile Pro  
335 340 345

Gly Ile Lys Ser Asn Met Phe Thr Gly Leu Ile Asn Leu Lys Tyr Leu  
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Ser Leu Ser Asn Ser Phe Thr Ser Leu Arg Thr Leu Thr Asn Glu Thr  
365 370 375

Phe Val Ser Leu Ala His Ser Pro Leu His Ile Leu Asn Leu Thr Lys  
380 385 390 395

Asn Lys Ile Ser Lys Ile Glu Ser Asp Ala Phe Ser Trp Leu Gly His  
400 405 410

Leu Glu Val Leu Asp Leu Gly Leu Asn Glu Ile Gly Gln Glu Leu Thr  
415 420 425

Gly Gln Glu Trp Arg Gly Leu Glu Asn Ile Phe Glu Ile Tyr Leu Ser  
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Tyr Asn Lys Tyr Leu Gln Leu Thr Arg Asn Ser Phe Ala Leu Val Pro  
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Ser Leu Gln Arg Leu Met Leu Arg Arg Val Ala Leu Lys Asn Val Asp  
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Ser Ser Pro Ser Pro Phe Gln Pro Leu Arg Asn Leu Thr Ile Leu Asp  
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Leu Glu Lys Leu Glu Ile Leu Asp Leu Gln His Asn Asn Leu Ala Arg  
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Leu Trp Lys His Ala Asn Pro Gly Gly Pro Ile Tyr Phe Leu Lys Gly  
525 530 535

Leu Ser His Leu His Ile Leu Asn Leu Glu Ser Asn Gly Phe Asp Glu  
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Leu Gly Leu Asn Asn Leu Asn Thr Leu Pro Ala Ser Val Phe Asn Asn  
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Gln Val Ser Leu Lys Ser Leu Asn Leu Gln Lys Asn Leu Ile Thr Ser  
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Val Glu Lys Lys Val Phe Gly Pro Ala Phe Arg Asn Leu Thr Glu Leu  
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Asp Met Arg Phe Asn Pro Phe Asp Cys Thr Cys Glu Ser Ile Ala Trp  
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Phe Val Asn Trp Ile Asn Glu Thr His Thr Asn Ile Pro Glu Leu Ser  
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Ser His Tyr Leu Cys Asn Thr Pro Pro His Tyr His Gly Phe Pro Val  
655 660 665

Arg Leu Phe Asp Thr Ser Ser Cys Lys Asp Ser Ala Pro Phe Glu Leu  
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Phe Phe Met Ile Asn Thr Ser Ile Leu Leu Ile Phe Ile Phe Ile Val  
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Leu Leu Ile His Phe Glu Gly Trp Arg Ile Ser Phe Tyr Trp Asn Val  
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Ser Val His Arg Val Leu Gly Phe Lys Glu Ile Asp Arg Gln Thr Glu  
720 725 730

Gln Phe Glu Tyr Ala Ala Tyr Ile Ile His Ala Tyr Lys Asp Lys Asp  
735 740 745

Trp Val Trp Glu His Phe Ser Ser Met Glu Lys Glu Asp Gln Ser Leu  
750 755 760

Lys Phe Cys Leu Glu Glu Arg Asp Phe Glu Ala Gly Val Phe Glu Leu  
765 770 775

Glu Ala Ile Val Asn Ser Ile Lys Arg Ser Arg Lys Ile Ile Phe Val  
780 785 790 795

Ile Thr His His Leu Leu Lys Asp Pro Leu Cys Lys Arg Phe Lys Val  
800 805 810

His His Ala Val Gln Gln Ala Ile Glu Gln Asn Leu Asp Ser Ile Ile  
815 820 825

Leu Val Phe Leu Glu Glu Ile Pro Asp Tyr Lys Leu Asn His Ala Leu  
830 835 840

Cys Leu Arg Arg Gly Met Phe Lys Ser His Cys Ile Leu Asn Trp Pro  
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Lys Asn Leu Asp Leu Ser Phe Asn Pro Leu Arg His Leu Gly Ser Tyr	
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agc ttc ttc agt ttc cca gaa ctg cag gtg ctg gat tta tcc agg tgt	144
Ser Phe Phe Ser Phe Pro Glu Leu Gln Val Leu Asp Leu Ser Arg Cys	
35 40 45	
gaa atc cag aca att gaa gat ggg gca tat cag agc cta agc cac ctc	192
Glu Ile Gln Thr Ile Glu Asp Gly Ala Tyr Gln Ser Leu Ser His Leu	
50 55 60	
tct acc tta ata ttg aca gga aac ccc atc cag agt tta gcc ctg gga	240
Ser Thr Leu Ile Leu Thr Gly Asn Pro Ile Gln Ser Leu Ala Leu Gly	
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gcc ttt tct gga cta tca agt tta cag aag ctg gtg gct gtg gag aca	288
Ala Phe Ser Gly Leu Ser Ser Leu Gln Lys Leu Val Ala Val Glu Thr	
85 90 95	
aat cta gca tct cta gag aac ttc ccc att gga cat ctc aaa act ttg	336

Asn	Leu	Ala	Ser	Leu	Glu	Asn	Phe	Pro	Ile	Gly	His	Leu	Lys	Thr	Leu		
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Lys	Glu		Leu	Asn	Val	Ala	His	Asn	Leu	Ile	Gln	Ser	Phe	Lys	Leu	Pro	
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gag	tat	ttt	tct	aat	ctg	acc	aat	cta	gag	cac	ttg	gac	ctt	tcc	agc	432	
Glu	Tyr	Phe	Ser	Asn	Leu	Thr	Asn	Leu	Glu	His	Leu	Asp	Leu	Ser	Ser		
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Met	Pro	Leu	Leu	Asn	Leu	Ser	Leu	Asp	Leu	Ser	Leu	Asn	Pro	Met	Asn		
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Phe	Ile	Gln	Pro	Gly	Ala	Phe	Lys	Glu	Ile	Arg	Leu	His	Lys	Leu	Thr		
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Leu	Arg	Asn	Asn	Phe	Asp	Ser	Leu	Asn	Val	Met	Lys	Thr	Cys	Ile	Gln		
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Gly	Leu	Ala	Gly	Leu	Glu	Val	His	Arg	Leu	Val	Leu	Gly	Glu	Phe	Arg		
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Asn	Glu	Gly	Asn	Leu	Glu	Lys	Phe	Asp	Lys	Ser	Ala	Leu	Glu	Gly	Leu		
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tgc	aat	ttg	acc	att	gaa	gaa	ttc	cga	tta	gca	tac	tta	gac	tac	tac	768	
Cys	Asn	Leu	Thr	Ile	Glu	Glu	Phe	Arg	Leu	Ala	Tyr	Leu	Asp	Tyr	Tyr		
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ctc	gat	gat	att	att	gac	tta	ttt	aat	tgt	ttg	aca	aat	gtt	tct	tca	816	
Leu	Asp	Asp	Ile	Ile	Asp	Leu	Phe	Asn	Cys	Leu	Thr	Asn	Val	Ser	Ser		
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ttt	tcc	ctg	gtg	agt	gtg	act	att	gaa	agg	gta	aaa	gac	ttt	tct	tat	864	
Phe	Ser	Leu	Val	Ser	Val	Thr	Ile	Glu	Arg	Val	Lys	Asp	Phe	Ser	Tyr		
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Phe	Pro	Thr	Leu	Lys	Leu	Lys	Ser	Leu	Lys	Arg	Leu	Thr	Phe	Thr	Ser		
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aac	aaa	ggg	ggg	aat	gct	ttt	tca	gaa	gtt	gat	cta	cca	agc	ctt	gag	1008	
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Asn	Gly	Val	Ile	Thr	Met	Ser	Ser	Asn	Phe	Leu	Gly	Leu	Glu	Gln	Leu					
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Glu	His	Leu	Asp	Phe	Gln	His	Ser	Asn	Leu	Lys	Gln	Met	Ser	Glu	Phe					
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Ser	Val	Phe	Leu	Ser	Leu	Arg	Asn	Leu	Ile	Tyr	Leu	Asp	Ile	Ser	His					
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act	cac	acc	aga	gtt	gct	ttc	aat	ggc	atc	ttc	aat	ggc	ttg	tcc	agt	1296				
Thr	His	Thr	Arg	Val	Ala	Phe	Asn	Gly	Ile	Phe	Asn	Gly	Leu	Ser	Ser					
			420					425					430							
ctc	gaa	gtc	ttg	aaa	atg	gct	ggc	aat	tct	ttc	cag	gaa	aac	ttc	ctt	1344				
Leu	Glu	Val	Leu	Lys	Met	Ala	Gly	Asn	Ser	Phe	Gln	Glu	Asn	Phe	Leu					
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cca	gat	atc	ttc	aca	gag	ctg	aga	aac	ttg	acc	ttc	ctg	gac	ctc	tct	1392				
Pro	Asp	Ile	Phe	Thr	Glu	Leu	Arg	Asn	Leu	Thr	Phe	Leu	Asp	Leu	Ser					
	450					455					460									
cag	tgt	caa	ctg	gag	cag	ttg	tct	cca	aca	gca	ttt	aac	tca	ctc	tcc	1440				
Gln	Cys	Gln	Leu	Glu	Gln	Leu	Ser	Pro	Thr	Ala	Phe	Asn	Ser	Leu	Ser					
465					470					475					480					
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Ser	Leu	Gln	Val	Leu	Asn	Met	Ser	His	Asn	Asn	Phe	Phe	Ser	Leu	Asp					
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acg	ttt	cct	tat	aag	tgt	ctg	aac	tcc	ctc	cag	gtt	ctt	gat	tac	agt	1536				
Thr	Phe	Pro	Tyr	Lys	Cys	Leu	Asn	Ser	Leu	Gln	Val	Leu	Asp	Tyr	Ser					
			500					505					510							
ctc	aat	cac	ata	atg	act	tcc	aaa	aaa	cag	gaa	cta	cag	cat	ttt	cca	1584				
Leu	Asn	His	Ile	Met	Thr	Ser	Lys	Lys	Gln	Glu	Leu	Gln	His	Phe	Pro					
		515					520					525								
agt	agt	cta	gct	ttc	tta	aat	ctt	act	cag	aat	gac	ttt	gct	tgt	act	1632				
Ser	Ser	Leu	Ala	Phe	Leu	Asn	Leu	Thr	Gln	Asn	Asp	Phe	Ala	Cys	Thr					
	530					535					540									
tgt	gaa	cac	cag	agt	ttc	ctg	caa	tgg	atc	aag	gac	cag	agg	cag	ctc	1680				
Cys	Glu	His	Gln	Ser	Phe	Leu	Gln	Trp	Ile	Lys	Asp	Gln	Arg	Gln	Leu					
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ttg	gtg	gaa	gtt	gaa	cga	atg	gaa	tgt	gca	aca	cct	tca	gat	aag	cag	1728				
Leu	Val	Glu	Val	Glu	Arg	Met	Glu	Cys	Ala	Thr	Pro	Ser	Asp	Lys	Gln					
				565					570					575						
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			580					585					590							

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ata aag tat ggt aga ggt gaa aac atc tat gat gcc ttt gtt atc tac Ile Lys Tyr Gly Arg Gly Glu Asn Ile Tyr Asp Ala Phe Val Ile Tyr 625 630 635 640	1920
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gaa gaa ggg gtg cct cca ttt cag ctc tgc ctt cac tac aga gac ttt Glu Glu Gly Val Pro Pro Phe Gln Leu Cys Leu His Tyr Arg Asp Phe 660 665 670	2016
att ccc ggt gtg gcc att gct gcc aac atc atc cat gaa ggt ttc cat Ile Pro Gly Val Ala Ile Ala Ala Asn Ile Ile His Glu Gly Phe His 675 680 685	2064
aaa agc cga aag gtg att gtt gtg gtg tcc cag cac ttc atc cag agc Lys Ser Arg Lys Val Ile Val Val Val Ser Gln His Phe Ile Gln Ser 690 695 700	2112
cgc tgg tgt atc ttt gaa tat gag att gct cag acc tgg cag ttt ctg Arg Trp Cys Ile Phe Glu Tyr Glu Ile Ala Gln Thr Trp Gln Phe Leu 705 710 715 720	2160
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Ser Phe Phe Ser Phe Pro Glu Leu Gln Val Leu Asp Leu Ser Arg Cys  
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Glu Ile Gln Thr Ile Glu Asp Gly Ala Tyr Gln Ser Leu Ser His Leu  
50 55 60

Ser Thr Leu Ile Leu Thr Gly Asn Pro Ile Gln Ser Leu Ala Leu Gly  
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Ala Phe Ser Gly Leu Ser Ser Leu Gln Lys Leu Val Ala Val Glu Thr  
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Asn Leu Ala Ser Leu Glu Asn Phe Pro Ile Gly His Leu Lys Thr Leu  
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Lys Glu Leu Asn Val Ala His Asn Leu Ile Gln Ser Phe Lys Leu Pro  
115 120 125

Glu Tyr Phe Ser Asn Leu Thr Asn Leu Glu His Leu Asp Leu Ser Ser  
130 135 140

Asn Lys Ile Gln Ser Ile Tyr Cys Thr Asp Leu Arg Val Leu His Gln  
145 150 155 160

Met Pro Leu Leu Asn Leu Ser Leu Asp Leu Ser Leu Asn Pro Met Asn  
165 170 175

Phe Ile Gln Pro Gly Ala Phe Lys Glu Ile Arg Leu His Lys Leu Thr  
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Leu Arg Asn Asn Phe Asp Ser Leu Asn Val Met Lys Thr Cys Ile Gln  
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Gly Leu Ala Gly Leu Glu Val His Arg Leu Val Leu Gly Glu Phe Arg  
210 215 220

Asn Glu Gly Asn Leu Glu Lys Phe Asp Lys Ser Ala Leu Glu Gly Leu  
225 230 235 240

Cys Asn Leu Thr Ile Glu Glu Phe Arg Leu Ala Tyr Leu Asp Tyr Tyr

245										250				255			
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Phe 305	Pro	Thr	Leu	Lys 310	Leu	Lys	Ser	Leu	Lys	Arg 315	Leu	Thr	Phe	Thr	Ser 320		
Asn	Lys	Gly	Gly	Asn 325	Ala	Phe	Ser	Glu	Val 330	Asp	Leu	Pro	Ser	Leu 335	Glu		
Phe	Leu	Asp	Leu 340	Ser	Arg	Asn	Gly	Leu 345	Ser	Phe	Lys	Gly	Cys 350	Cys	Ser		
Gln	Ser	Asp 355	Phe	Gly	Thr	Thr	Ser 360	Leu	Lys	Tyr	Leu	Asp 365	Leu	Ser	Phe		
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Glu 385	His	Leu	Asp	Phe	Gln 390	His	Ser	Asn	Leu	Lys 395	Gln	Met	Ser	Glu	Phe 400		
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Thr	His	Thr	Arg 420	Val	Ala	Phe	Asn	Gly 425	Ile	Phe	Asn	Gly	Leu 430	Ser	Ser		
Leu	Glu	Val 435	Leu	Lys	Met	Ala	Gly 440	Asn	Ser	Phe	Gln	Glu 445	Asn	Phe	Leu		
Pro	Asp 450	Ile	Phe	Thr	Glu	Leu 455	Arg	Asn	Leu	Thr	Phe	Leu	Asp	Leu	Ser		
Gln 465	Cys	Gln	Leu	Glu	Gln 470	Leu	Ser	Pro	Thr	Ala	Phe	Asn	Ser	Leu	Ser 480		
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Thr Phe Pro Tyr Lys Cys Leu Asn Ser Leu Gln Val Leu Asp Tyr Ser  
500 505 510

Leu Asn His Ile Met Thr Ser Lys Lys Gln Glu Leu Gln His Phe Pro  
515 520 525

Ser Ser Leu Ala Phe Leu Asn Leu Thr Gln Asn Asp Phe Ala Cys Thr  
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Cys Glu His Gln Ser Phe Leu Gln Trp Ile Lys Asp Gln Arg Gln Leu  
545 550 555 560

Leu Val Glu Val Glu Arg Met Glu Cys Ala Thr Pro Ser Asp Lys Gln  
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Gly Met Pro Val Leu Ser Leu Asn Ile Thr Cys Gln Met Asn Lys Thr  
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Ile Ile Gly Val Ser Val Leu Ser Val Leu Val Val Ser Val Val Ala  
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Val Leu Val Tyr Lys Phe Tyr Phe His Leu Met Leu Leu Ala Gly Cys  
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Ile Lys Tyr Gly Arg Gly Glu Asn Ile Tyr Asp Ala Phe Val Ile Tyr  
625 630 635 640

Ser Ser Gln Asp Glu Asp Trp Val Arg Asn Glu Leu Val Lys Asn Leu  
645 650 655

Glu Glu Gly Val Pro Pro Phe Gln Leu Cys Leu His Tyr Arg Asp Phe  
660 665 670

Ile Pro Gly Val Ala Ile Ala Ala Asn Ile Ile His Glu Gly Phe His  
675 680 685

Lys Ser Arg Lys Val Ile Val Val Val Ser Gln His Phe Ile Gln Ser  
690 695 700

Arg Trp Cys Ile Phe Glu Tyr Glu Ile Ala Gln Thr Trp Gln Phe Leu  
705 710 715 720

Ser Ser Arg Ala Gly Ile Ile Phe Ile Val Leu Gln Lys Val Glu Lys  
725 730 735

Thr Leu Leu Arg Gln Gln Val Glu Leu Tyr Arg Leu Leu Ser Arg Asn  
740 745 750

Thr Tyr Leu Glu Trp Glu Asp Ser Val Leu Gly Arg His Ile Phe Trp  
755 760 765

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aat cat aac tat ctt aat tcc ctt cca cca gga gta ttt agc cat ctg 96  
Asn His Asn Tyr Leu Asn Ser Leu Pro Pro Gly Val Phe Ser His Leu  
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act gca tta agg gga cta agc ctc aac tcc aac agg ctg aca gtt ctt 144  
Thr Ala Leu Arg Gly Leu Ser Leu Asn Ser Asn Arg Leu Thr Val Leu  
35 40 45  
tct cac aat gat tta cct gct aat tta gag atc ctg gac ata tcc agg 192  
Ser His Asn Asp Leu Pro Ala Asn Leu Glu Ile Leu Asp Ile Ser Arg  
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aac cag ctc cta gct cct aat cct gat gta ttt gta tca ctt agt gtc 240  
Asn Gln Leu Leu Ala Pro Asn Pro Asp Val Phe Val Ser Leu Ser Val  
65 70 75 80  
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Leu Asp Ile Thr His Asn Lys Phe Ile Cys Glu Cys Glu Leu Ser Thr  
85 90 95  
ttt atc aat tgg ctt aat cac acc aat gtc act ata gct ggg cct cct 336  
Phe Ile Asn Trp Leu Asn His Thr Asn Val Thr Ile Ala Gly Pro Pro  
100 105 110  
gca gac ata tat tgt gtg tac cct gac tcg ttc tct ggg gtt tcc ctc 384  
Ala Asp Ile Tyr Cys Val Tyr Pro Asp Ser Phe Ser Gly Val Ser Leu  
115 120 125

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aca gaa cct gat atg tac aaa tat gat gcc tat ttg tgc ttc agc agc Thr Glu Pro Asp Met Tyr Lys Tyr Asp Ala Tyr Leu Cys Phe Ser Ser 195 200 205	624
aaa gac ttc aca tgg gtg cag aat gct ttg ctc aaa cac ctg gac act Lys Asp Phe Thr Trp Val Gln Asn Ala Leu Leu Lys His Leu Asp Thr 210 215 220	672
caa tac agt gac caa aac aga ttc aac ctg tgc ttt gaa gaa aga gac Gln Tyr Ser Asp Gln Asn Arg Phe Asn Leu Cys Phe Glu Glu Arg Asp 225 230 235 240	720
ttt gtc cca gga gaa aac cgc att gcc aat atc cag gat gcc atc tgg Phe Val Pro Gly Glu Asn Arg Ile Ala Asn Ile Gln Asp Ala Ile Trp 245 250 255	768
aac agt aga aag atc gtt tgt ctt gtg agc aga cac ttc ctt aga gat Asn Ser Arg Lys Ile Val Cys Leu Val Ser Arg His Phe Leu Arg Asp 260 265 270	816
ggc tgg tgc ctt gaa gcc ttc agt tat gcc cag ggc agg tgc tta tct Gly Trp Cys Leu Glu Ala Phe Ser Tyr Ala Gln Gly Arg Cys Leu Ser 275 280 285	864
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tac cag ttg atg aaa cat caa tcc atc aga ggc ttt gta cag aaa cag Tyr Gln Leu Met Lys His Gln Ser Ile Arg Gly Phe Val Gln Lys Gln 305 310 315 320	960
cag tat ttg agg tgg cct gag gat ctc cag gat gtt ggc tgg ttt ctt Gln Tyr Leu Arg Trp Pro Glu Asp Leu Gln Asp Val Gly Trp Phe Leu 325 330 335	1008
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gac aat aac att ccg ttg caa act gta gca acc atc tcc taatcaaagg Asp Asn Asn Ile Pro Leu Gln Thr Val Ala Thr Ile Ser 355 360 365	1105
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atcattttgg ggtcctctct ggaggttttt tttttctttt tgctactatg aaaacaacat 1225  
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Thr Ala Leu Arg Gly Leu Ser Leu Asn Ser Asn Arg Leu Thr Val Leu  
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Ser His Asn Asp Leu Pro Ala Asn Leu Glu Ile Leu Asp Ile Ser Arg  
 50 55 60

Asn Gln Leu Leu Ala Pro Asn Pro Asp Val Phe Val Ser Leu Ser Val  
 65 70 75 80

Leu Asp Ile Thr His Asn Lys Phe Ile Cys Glu Cys Glu Leu Ser Thr  
 85 90 95

Phe Ile Asn Trp Leu Asn His Thr Asn Val Thr Ile Ala Gly Pro Pro  
 100 105 110

Ala Asp Ile Tyr Cys Val Tyr Pro Asp Ser Phe Ser Gly Val Ser Leu  
 115 120 125

Phe Ser Leu Ser Thr Glu Gly Cys Asp Glu Glu Glu Val Leu Lys Ser  
 130 135 140

Leu Lys Phe Ser Leu Phe Ile Val Cys Thr Val Thr Leu Thr Leu Phe  
 145 150 155 160

Leu Met Thr Ile Leu Thr Val Thr Lys Phe Arg Gly Phe Cys Phe Ile  
 165 170 175

Cys Tyr Lys Thr Ala Gln Arg Leu Val Phe Lys Asp His Pro Gln Gly  
 180 185 190



Thr Glu Pro Asp Met Tyr Lys Tyr Asp Ala Tyr Leu Cys Phe Ser Ser  
 195 200 205

Lys Asp Phe Thr Trp Val Gln Asn Ala Leu Leu Lys His Leu Asp Thr  
 210 215 220

Gln Tyr Ser Asp Gln Asn Arg Phe Asn Leu Cys Phe Glu Glu Arg Asp  
 225 230 235 240

Phe Val Pro Gly Glu Asn Arg Ile Ala Asn Ile Gln Asp Ala Ile Trp  
 245 250 255

Asn Ser Arg Lys Ile Val Cys Leu Val Ser Arg His Phe Leu Arg Asp  
 260 265 270

Gly Trp Cys Leu Glu Ala Phe Ser Tyr Ala Gln Gly Arg Cys Leu Ser  
 275 280 285

Asp Leu Asn Ser Ala Leu Ile Met Val Val Val Gly Ser Leu Ser Gln  
 290 295 300

Tyr Gln Leu Met Lys His Gln Ser Ile Arg Gly Phe Val Gln Lys Gln  
 305 310 315 320

Gln Tyr Leu Arg Trp Pro Glu Asp Leu Gln Asp Val Gly Trp Phe Leu  
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 1 5 10 15

48

att tcc aaa ctc ctt ggg gct aga tgg ttt cct aaa act ctg ccc tgt

96

Ile	Ser	Lys	Leu	Leu	Gly	Ala	Arg	Trp	Phe	Pro	Lys	Thr	Leu	Pro	Cys		
			20					25					30				
gat	gtc	act	ctg	gat	gtt	cca	aag	aac	cat	gtg	atc	gtg	gac	tgc	aca		144
Asp	Val	Thr	Leu	Asp	Val	Pro	Lys	Asn	His	Val	Ile	Val	Asp	Cys	Thr		
		35					40					45					
gac	aag	cat	ttg	aca	gaa	att	cct	gga	ggg	att	ccc	acg	aac	acc	acg		192
Asp	Lys	His	Leu	Thr	Glu	Ile	Pro	Gly	Gly	Ile	Pro	Thr	Asn	Thr	Thr		
	50					55					60						
aac	ctc	acc	ctc	acc	att	aac	cac	ata	cca	gac	atc	tcc	cca	gcg	tcc		240
Asn	Leu	Thr	Leu	Thr	Ile	Asn	His	Ile	Pro	Asp	Ile	Ser	Pro	Ala	Ser		
65					70					75					80		
ttt	cac	aga	ctg	gac	cat	ctg	gta	gag	atc	gat	ttc	aga	tgc	aac	tgt		288
Phe	His	Arg	Leu	Asp	His	Leu	Val	Glu	Ile	Asp	Phe	Arg	Cys	Asn	Cys		
			85					90						95			
gta	cct	att	cca	ctg	ggg	tca	aaa	aac	aac	atg	tgc	atc	aag	agg	ctg		336
Val	Pro	Ile	Pro	Leu	Gly	Ser	Lys	Asn	Asn	Met	Cys	Ile	Lys	Arg	Leu		
			100					105					110				
cag	att	aaa	ccc	aga	agc	ttt	agt	gga	ctc	act	tat	tta	aaa	tcc	ctt		384
Gln	Ile	Lys	Pro	Arg	Ser	Phe	Ser	Gly	Leu	Thr	Tyr	Leu	Lys	Ser	Leu		
		115					120					125					
tac	ctg	gat	gga	aac	cag	cta	cta	gag	ata	ccg	cag	ggc	ctc	ccg	cct		432
Tyr	Leu	Asp	Gly	Asn	Gln	Leu	Leu	Glu	Ile	Pro	Gln	Gly	Leu	Pro	Pro		
	130					135					140						
agc	tta	cag	ctt	ctc	agc	ctt	gag	gcc	aac	aac	atc	ttt	tcc	atc	aga		480
Ser	Leu	Gln	Leu	Leu	Ser	Leu	Glu	Ala	Asn	Asn	Ile	Phe	Ser	Ile	Arg		
145					150					155					160		
aaa	gag	aat	cta	aca	gaa	ctg	gcc	aac	ata	gaa	ata	ctc	tac	ctg	ggc		528
Lys	Glu	Asn	Leu	Thr	Glu	Leu	Ala	Asn	Ile	Glu	Ile	Leu	Tyr	Leu	Gly		
				165					170					175			
caa	aac	tgt	tat	tat	cga	aat	cct	tgt	tat	gtt	tca	tat	tca	ata	gag		576
Gln	Asn	Cys	Tyr	Tyr	Arg	Asn	Pro	Cys	Tyr	Val	Ser	Tyr	Ser	Ile	Glu		
			180					185					190				
aaa	gat	gcc	ttc	cta	aac	ttg	aca	aag	tta	aaa	gtg	ctc	tcc	ctg	aaa		624
Lys	Asp	Ala	Phe	Leu	Asn	Leu	Thr	Lys	Leu	Lys	Val	Leu	Ser	Leu	Lys		
		195					200					205					
gat	aac	aat	gtc	aca	gcc	gtc	cct	act	gtt	ttg	cca	tct	act	tta	aca		672
Asp	Asn	Asn	Val	Thr	Ala	Val	Pro	Thr	Val	Leu	Pro	Ser	Thr	Leu	Thr		
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gaa	cta	tat	ctc	tac	aac	aac	atg	att	gca	aaa	atc	caa	gaa	gat	gat		720
Glu	Leu	Tyr	Leu	Tyr	Asn	Asn	Met	Ile	Ala	Lys	Ile	Gln	Glu	Asp	Asp		
225					230					235					240		
ttt	aat	aac	ctc	aac	caa	tta	caa	att	ctt	gac	cta	agt	gga	aat	tgc		768
Phe	Asn	Asn	Leu	Asn	Gln	Leu	Gln	Ile	Leu	Asp	Leu	Ser	Gly	Asn	Cys		
				245				250						255			
cct	cgt	tgt	tat	aat	gcc	cca	ttt	cct	tgt	gcg	ccg	tgt	aaa	aat	aat		816
Pro	Arg	Cys	Tyr	Asn	Ala	Pro	Phe	Pro	Cys	Ala	Pro	Cys	Lys	Asn	Asn		

260										265										270										
tct	ccc	cta	cag	atc	cct	gta	aat	gct	ttt	gat	gcg	ctg	aca	gaa	tta	864														
Ser	Pro	Leu	Gln	Ile	Pro	Val	Asn	Ala	Phe	Asp	Ala	Leu	Thr	Glu	Leu															
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aaa	gtt	tta	cgt	cta	cac	agt	aac	tct	ctt	cag	cat	gtg	ccc	cca	aga	912														
Lys	Val	Leu	Arg	Leu	His	Ser	Asn	Ser	Leu	Gln	His	Val	Pro	Pro	Arg															
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Met	Ser	Val	Asn	Glu	Ser	Cys	Tyr	Lys	Tyr	Gly	Gln	Thr	Leu	Asp	Leu															
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agt	aaa	aat	agt	ata	ttt	ttt	gtc	aag	tcc	tct	gat	ttt	cag	cat	ctt	1536														
Ser	Lys	Asn	Ser	Ile	Phe	Phe	Val	Lys	Ser	Ser	Asp	Phe	Gln	His	Leu															
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tct ttc ctc aaa tgc ctg aat ctg tca gga aat ctc att agc caa act	1584
Ser Phe Leu Lys Cys Leu Asn Leu Ser Gly Asn Leu Ile Ser Gln Thr	
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Leu Asn Gly Ser Glu Phe Gln Pro Leu Ala Glu Leu Arg Tyr Leu Asp	
530 535 540	
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Phe Ser Asn Asn Arg Leu Asp Leu Leu His Ser Thr Ala Phe Glu Glu	
545 550 555 560	
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Leu His Lys Leu Glu Val Leu Asp Ile Ser Ser Asn Ser His Tyr Phe	
565 570 575	
caa tca gaa gga att act cat atg cta aac ttt acc aag aac cta aag	1776
Gln Ser Glu Gly Ile Thr His Met Leu Asn Phe Thr Lys Asn Leu Lys	
580 585 590	
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Val Leu Gln Lys Leu Met Met Asn Asp Asn Asp Ile Ser Ser Ser Thr	
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agc agg acc atg gag agt gag tct ctt aga act ctg gaa ttc aga gga	1872
Ser Arg Thr Met Glu Ser Glu Ser Leu Arg Thr Leu Glu Phe Arg Gly	
610 615 620	
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Asn His Leu Asp Val Leu Trp Arg Glu Gly Asp Asn Arg Tyr Leu Gln	
625 630 635 640	
tta ttc aag aat ctg cta aaa tta gag gaa tta gac atc tct aaa aat	1968
Leu Phe Lys Asn Leu Leu Lys Leu Glu Glu Leu Asp Ile Ser Lys Asn	
645 650 655	
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Ser Leu Ser Phe Leu Pro Ser Gly Val Phe Asp Gly Met Pro Pro Asn	
660 665 670	
cta aag aat ctc tct ttg gcc aaa aat ggg ctc aaa tct ttc agt tgg	2064
Leu Lys Asn Leu Ser Leu Ala Lys Asn Gly Leu Lys Ser Phe Ser Trp	
675 680 685	
aag aaa ctc cag tgt cta aag aac ctg gaa act ttg gac ctc agc cac	2112
Lys Lys Leu Gln Cys Leu Lys Asn Leu Glu Thr Leu Asp Leu Ser His	
690 695 700	
aac caa ctg acc act gtc cct gag aga tta tcc aac tgt tcc aga agc	2160
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705 710 715 720	
ctc aag aat ctg att ctt aag aat aat caa atc agg agt ctg acg aag	2208
Leu Lys Asn Leu Ile Leu Lys Asn Asn Gln Ile Arg Ser Leu Thr Lys	
725 730 735	
tat ttt cta caa gat gcc ttc cag ttg cga tat ctg gat ctc agc tca	2256
Tyr Phe Leu Gln Asp Ala Phe Gln Leu Arg Tyr Leu Asp Leu Ser Ser	
740 745 750	

aat aaa atc cag atg atc caa aag acc agc ttc cca gaa aat gtc ctc Asn Lys Ile Gln Met Ile Gln Lys Thr Ser Phe Pro Glu Asn Val Leu 755 760 765	2304
aac aat ctg aag atg ttg ctt ttg cat cat aat cgg ttt ctg tgc acc Asn Asn Leu Lys Met Leu Leu Leu His His Asn Arg Phe Leu Cys Thr 770 775 780	2352
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aag ggc caa agt gtg atc tcc ctg gat ctg tac acc tgt gag tta gat Lys Gly Gln Ser Val Ile Ser Leu Asp Leu Tyr Thr Cys Glu Leu Asp 820 825 830	2496
ctg act aac ctg att ctg ttc tca ctt tcc ata tct gta tct ctc ttt Leu Thr Asn Leu Ile Leu Phe Ser Leu Ser Ile Ser Val Ser Leu Phe 835 840 845	2544
ctc atg gtg atg atg aca gca agt cac ctc tat ttc tgg gat gtg tgg Leu Met Val Met Met Thr Ala Ser His Leu Tyr Phe Trp Asp Val Trp 850 855 860	2592
tat att tac cat ttc tgt aag gcc aag ata aag ggg tat cag cgt cta Tyr Ile Tyr His Phe Cys Lys Ala Lys Ile Lys Gly Tyr Gln Arg Leu 865 870 875 880	2640
ata tca cca gac tgt tgc tat gat gct ttt att gtg tat gac act aaa Ile Ser Pro Asp Cys Cys Tyr Asp Ala Phe Ile Val Tyr Asp Thr Lys 885 890 895	2688
gac cca gct gtg acc gag tgg gtt ttg gct gag ctg gtg gcc aaa ctg Asp Pro Ala Val Thr Glu Trp Val Leu Ala Glu Leu Val Ala Lys Leu 900 905 910	2736
gaa gac cca aga gag aaa cat ttt aat tta tgt ctc gag gaa agg gac Glu Asp Pro Arg Glu Lys His Phe Asn Leu Cys Leu Glu Glu Arg Asp 915 920 925	2784
tgg tta cca ggg cag cca gtt ctg gaa aac ctt tcc cag agc ata cag Trp Leu Pro Gly Gln Pro Val Leu Glu Asn Leu Ser Gln Ser Ile Gln 930 935 940	2832
ctt agc aaa aag aca gtg ttt gtg atg aca gac aag tat gca aag act Leu Ser Lys Lys Thr Val Phe Val Met Thr Asp Lys Tyr Ala Lys Thr 945 950 955 960	2880
gaa aat ttt aag ata gca ttt tac ttg tcc cat cag agg ctc atg gat Glu Asn Phe Lys Ile Ala Phe Tyr Leu Ser His Gln Arg Leu Met Asp 965 970 975	2928
gaa aaa gtt gat gtg att atc ttg ata ttt ctt gag aag ccc ttt cag Glu Lys Val Asp Val Ile Ile Leu Ile Phe Leu Glu Lys Pro Phe Gln 980 985 990	2976
aag tcc aag ttc ctc cag ctc cgg aaa agg ctc tgt ggg agt tct gtc	3024

Lys Ser Lys Phe Leu Gln Leu Arg Lys Arg Leu Cys Gly Ser Ser Val  
 995 1000 1005  
 ctt gag tgg cca aca aac ccg caa gct cac cca tac ttc tgg cag 3069  
 Leu Glu Trp Pro Thr Asn Pro Gln Ala His Pro Tyr Phe Trp Gln  
 1010 1015 1020  
 tgt cta aag aac gcc ctg gcc aca gac aat cat gtg gcc tat agt 3114  
 Cys Leu Lys Asn Ala Leu Ala Thr Asp Asn His Val Ala Tyr Ser  
 1025 1030 1035  
 cag gtg ttc aag gaa acg gtc tag 3138  
 Gln Val Phe Lys Glu Thr Val  
 1040 1045

<210> 12  
 <211> 1045  
 <212> PRT  
 <213> Homo sapiens

<400> 12

Met Trp Thr Leu Lys Arg Leu Ile Leu Ile Leu Phe Asn Ile Ile Leu  
 1 5 10 15

Ile Ser Lys Leu Leu Gly Ala Arg Trp Phe Pro Lys Thr Leu Pro Cys  
 20 25 30

Asp Val Thr Leu Asp Val Pro Lys Asn His Val Ile Val Asp Cys Thr  
 35 40 45

Asp Lys His Leu Thr Glu Ile Pro Gly Gly Ile Pro Thr Asn Thr Thr  
 50 55 60

Asn Leu Thr Leu Thr Ile Asn His Ile Pro Asp Ile Ser Pro Ala Ser  
 65 70 75 80

Phe His Arg Leu Asp His Leu Val Glu Ile Asp Phe Arg Cys Asn Cys  
 85 90 95

Val Pro Ile Pro Leu Gly Ser Lys Asn Asn Met Cys Ile Lys Arg Leu  
 100 105 110

Gln Ile Lys Pro Arg Ser Phe Ser Gly Leu Thr Tyr Leu Lys Ser Leu  
 115 120 125

Tyr Leu Asp Gly Asn Gln Leu Leu Glu Ile Pro Gln Gly Leu Pro Pro  
 130 135 140

Ser Leu Gln Leu Leu Ser Leu Glu Ala Asn Asn Ile Phe Ser Ile Arg  
 145 150 155 160

Lys Glu Asn Leu Thr Glu Leu Ala Asn Ile Glu Ile Leu Tyr Leu Gly  
165 170 175

Gln Asn Cys Tyr Tyr Arg Asn Pro Cys Tyr Val Ser Tyr Ser Ile Glu  
180 185 190

Lys Asp Ala Phe Leu Asn Leu Thr Lys Leu Lys Val Leu Ser Leu Lys  
195 200 205

Asp Asn Asn Val Thr Ala Val Pro Thr Val Leu Pro Ser Thr Leu Thr  
210 215 220

Glu Leu Tyr Leu Tyr Asn Asn Met Ile Ala Lys Ile Gln Glu Asp Asp  
225 230 235 240

Phe Asn Asn Leu Asn Gln Leu Gln Ile Leu Asp Leu Ser Gly Asn Cys  
245 250 255

Pro Arg Cys Tyr Asn Ala Pro Phe Pro Cys Ala Pro Cys Lys Asn Asn  
260 265 270

Ser Pro Leu Gln Ile Pro Val Asn Ala Phe Asp Ala Leu Thr Glu Leu  
275 280 285

Lys Val Leu Arg Leu His Ser Asn Ser Leu Gln His Val Pro Pro Arg  
290 295 300

Trp Phe Lys Asn Ile Asn Lys Leu Gln Glu Leu Asp Leu Ser Gln Asn  
305 310 315 320

Phe Leu Ala Lys Glu Ile Gly Asp Ala Lys Phe Leu His Phe Leu Pro  
325 330 335

Ser Leu Ile Gln Leu Asp Leu Ser Phe Asn Phe Glu Leu Gln Val Tyr  
340 345 350

Arg Ala Ser Met Asn Leu Ser Gln Ala Phe Ser Ser Leu Lys Ser Leu  
355 360 365

Lys Ile Leu Arg Ile Arg Gly Tyr Val Phe Lys Glu Leu Lys Ser Phe  
370 375 380

Asn Leu Ser Pro Leu His Asn Leu Gln Asn Leu Glu Val Leu Asp Leu  
385 390 395 400

Gly Thr Asn Phe Ile Lys Ile Ala Asn Leu Ser Met Phe Lys Gln Phe  
 405 410 415  
 Lys Arg Leu Lys Val Ile Asp Leu Ser Val Asn Lys Ile Ser Pro Ser  
 420 425 430  
 Gly Asp Ser Ser Glu Val Gly Phe Cys Ser Asn Ala Arg Thr Ser Val  
 435 440 445  
 Glu Ser Tyr Glu Pro Gln Val Leu Glu Gln Leu His Tyr Phe Arg Tyr  
 450 455 460  
 Asp Lys Tyr Ala Arg Ser Cys Arg Phe Lys Asn Lys Glu Ala Ser Phe  
 465 470 475 480  
 Met Ser Val Asn Glu Ser Cys Tyr Lys Tyr Gly Gln Thr Leu Asp Leu  
 485 490 495  
 Ser Lys Asn Ser Ile Phe Phe Val Lys Ser Ser Asp Phe Gln His Leu  
 500 505 510  
 Ser Phe Leu Lys Cys Leu Asn Leu Ser Gly Asn Leu Ile Ser Gln Thr  
 515 520 525  
 Leu Asn Gly Ser Glu Phe Gln Pro Leu Ala Glu Leu Arg Tyr Leu Asp  
 530 535 540  
 Phe Ser Asn Asn Arg Leu Asp Leu Leu His Ser Thr Ala Phe Glu Glu  
 545 550 555 560  
 Leu His Lys Leu Glu Val Leu Asp Ile Ser Ser Asn Ser His Tyr Phe  
 565 570 575  
 Gln Ser Glu Gly Ile Thr His Met Leu Asn Phe Thr Lys Asn Leu Lys  
 580 585 590  
 Val Leu Gln Lys Leu Met Met Asn Asp Asn Asp Ile Ser Ser Ser Thr  
 595 600 605  
 Ser Arg Thr Met Glu Ser Glu Ser Leu Arg Thr Leu Glu Phe Arg Gly  
 610 615 620  
 Asn His Leu Asp Val Leu Trp Arg Glu Gly Asp Asn Arg Tyr Leu Gln  
 625 630 635 640



Leu Phe Lys Asn Leu Leu Lys Leu Glu Glu Leu Asp Ile Ser Lys Asn  
645 650 655

Ser Leu Ser Phe Leu Pro Ser Gly Val Phe Asp Gly Met Pro Pro Asn  
660 665 670

Leu Lys Asn Leu Ser Leu Ala Lys Asn Gly Leu Lys Ser Phe Ser Trp  
675 680 685

Lys Lys Leu Gln Cys Leu Lys Asn Leu Glu Thr Leu Asp Leu Ser His  
690 695 700

Asn Gln Leu Thr Thr Val Pro Glu Arg Leu Ser Asn Cys Ser Arg Ser  
705 710 715 720

Leu Lys Asn Leu Ile Leu Lys Asn Asn Gln Ile Arg Ser Leu Thr Lys  
725 730 735

Tyr Phe Leu Gln Asp Ala Phe Gln Leu Arg Tyr Leu Asp Leu Ser Ser  
740 745 750

Asn Lys Ile Gln Met Ile Gln Lys Thr Ser Phe Pro Glu Asn Val Leu  
755 760 765

Asn Asn Leu Lys Met Leu Leu Leu His His Asn Arg Phe Leu Cys Thr  
770 775 780

Cys Asp Ala Val Trp Phe Val Trp Trp Val Asn His Thr Glu Val Thr  
785 790 795 800

Ile Pro Tyr Leu Ala Thr Asp Val Thr Cys Val Gly Pro Gly Ala His  
805 810 815

Lys Gly Gln Ser Val Ile Ser Leu Asp Leu Tyr Thr Cys Glu Leu Asp  
820 825 830

Leu Thr Asn Leu Ile Leu Phe Ser Leu Ser Ile Ser Val Ser Leu Phe  
835 840 845

Leu Met Val Met Met Thr Ala Ser His Leu Tyr Phe Trp Asp Val Trp  
850 855 860

Tyr Ile Tyr His Phe Cys Lys Ala Lys Ile Lys Gly Tyr Gln Arg Leu  
865 870 875 880

Ile Ser Pro Asp Cys Cys Tyr Asp Ala Phe Ile Val Tyr Asp Thr Lys

885	890	895
Asp Pro Ala Val Thr Glu Trp Val Leu Ala Glu Leu Val Ala Lys Leu		
900	905	910
Glu Asp Pro Arg Glu Lys His Phe Asn Leu Cys Leu Glu Glu Arg Asp		
915	920	925
Trp Leu Pro Gly Gln Pro Val Leu Glu Asn Leu Ser Gln Ser Ile Gln		
930	935	940
Leu Ser Lys Lys Thr Val Phe Val Met Thr Asp Lys Tyr Ala Lys Thr		
945	950	955
Glu Asn Phe Lys Ile Ala Phe Tyr Leu Ser His Gln Arg Leu Met Asp		
965	970	975
Glu Lys Val Asp Val Ile Ile Leu Ile Phe Leu Glu Lys Pro Phe Gln		
980	985	990
Lys Ser Lys Phe Leu Gln Leu Arg Lys Arg Leu Cys Gly Ser Ser Val		
995	1000	1005
Leu Glu Trp Pro Thr Asn Pro Gln Ala His Pro Tyr Phe Trp Gln		
1010	1015	1020
Cys Leu Lys Asn Ala Leu Ala Thr Asp Asn His Val Ala Tyr Ser		
1025	1030	1035
Gln Val Phe Lys Glu Thr Val		
1040	1045	

<210> 13  
 <211> 180  
 <212> DNA  
 <213> Mus musculus

<220>  
 <221> CDS  
 <222> (1)..(177)  
 <223>

<400> 13	
ctt gga aaa cct ctt cag aag tct aag ttt ctt cag ctc agg aag aga	48
Leu Gly Lys Pro Leu Gln Lys Ser Lys Phe Leu Gln Leu Arg Lys Arg	
1 5 10 15	
ctc tgc agg agc tct gtc ctt gag tgg cct gca aat cca cag gct cac	96
Leu Cys Arg Ser Ser Val Leu Glu Trp Pro Ala Asn Pro Gln Ala His	

	20	25	30	
cca tac ttc tgg cag tgc ctg aaa aat gcc ctg acc aca gac aat cat				144
Pro Tyr Phe Trp Gln Cys Leu Lys Asn Ala Leu Thr Thr Asp Asn His				
	35	40	45	

gtg gct tat agt caa atg ttc aag gaa aca gtc tag				180
Val Ala Tyr Ser Gln Met Phe Lys Glu Thr Val				
	50	55		

<210> 14  
 <211> 59  
 <212> PRT  
 <213> Mus musculus

<400> 14

Leu Gly Lys Pro Leu Gln Lys Ser Lys Phe Leu Gln Leu Arg Lys Arg				
1	5	10	15	

Leu Cys Arg Ser Ser Val Leu Glu Trp Pro Ala Asn Pro Gln Ala His				
	20	25	30	

Pro Tyr Phe Trp Gln Cys Leu Lys Asn Ala Leu Thr Thr Asp Asn His				
	35	40	45	

Val Ala Tyr Ser Gln Met Phe Lys Glu Thr Val			
	50	55	

<210> 15  
 <211> 990  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (2)..(988)  
 <223>

<400> 15				
g aat tcc aga ctt ata aac ttg aaa aat ctc tat ttg gcc tgg aac tgc				49
Asn Ser Arg Leu Ile Asn Leu Lys Asn Leu Tyr Leu Ala Trp Asn Cys				
1	5	10	15	

tat ttt aac aaa gtt tgc gag aaa act aac ata gaa gat gga gta ttt				97
Tyr Phe Asn Lys Val Cys Glu Lys Thr Asn Ile Glu Asp Gly Val Phe				
	20	25	30	

gaa acg ctg aca aat ttg gag ttg cta tca cta tct ttc aat tct ctt				145
Glu Thr Leu Thr Asn Leu Glu Leu Leu Ser Leu Ser Phe Asn Ser Leu				
	35	40	45	

tca cat gtg cca ccc aaa ctg cca agc tcc cta cgc aaa ctt ttt ctg				193
Ser His Val Pro Pro Lys Leu Pro Ser Ser Leu Arg Lys Leu Phe Leu				
	50	55	60	

agc aac acc cag atc aaa tac att agt gaa gaa gat ttc aag gga ttg Ser Asn Thr Gln Ile Lys Tyr Ile Ser Glu Glu Asp Phe Lys Gly Leu 65 70 75 80	241
ata aat tta aca tta cta gat tta agc ggg aac tgt ccg agg tgc ttc Ile Asn Leu Thr Leu Leu Asp Leu Ser Gly Asn Cys Pro Arg Cys Phe 85 90 95	289
aat gcc cca ttt cca tgc gtg cct tgt gat ggt ggt gct tca att aat Asn Ala Pro Phe Pro Cys Val Pro Cys Asp Gly Gly Ala Ser Ile Asn 100 105 110	337
ata gat cgt ttt gct ttt caa aac ttg acc caa ctt cga tac cta aac Ile Asp Arg Phe Ala Phe Gln Asn Leu Thr Gln Leu Arg Tyr Leu Asn 115 120 125	385
ctc tct agc act tcc ctc agg aag att aat gct gcc tgg ttt aaa aat Leu Ser Ser Thr Ser Leu Arg Lys Ile Asn Ala Ala Trp Phe Lys Asn 130 135 140	433
atg cct cat ctg aag gtg ctg gat ctt gaa ttc aac tat tta gtg gga Met Pro His Leu Lys Val Leu Asp Leu Glu Phe Asn Tyr Leu Val Gly 145 150 155 160	481
gaa ata gcc tct ggg gca ttt tta acg atg ctg ccc cgc tta gaa ata Glu Ile Ala Ser Gly Ala Phe Leu Thr Met Leu Pro Arg Leu Glu Ile 165 170 175	529
ctt gac ttg tct ttt aac tat ata aag ggg agt tat cca cag cat att Leu Asp Leu Ser Phe Asn Tyr Ile Lys Gly Ser Tyr Pro Gln His Ile 180 185 190	577
aat att tcc aga aac ttc tct aaa ctt ttg tct cta cgg gca ttg cat Asn Ile Ser Arg Asn Phe Ser Lys Leu Leu Ser Leu Arg Ala Leu His 195 200 205	625
tta aga ggt tat gtg ttc cag gaa ctc aga gaa gat gat ttc cag ccc Leu Arg Gly Tyr Val Phe Gln Glu Leu Arg Glu Asp Asp Phe Gln Pro 210 215 220	673
ctg atg cag ctt cca aac tta tcg act atc aac ttg ggt att aat ttt Leu Met Gln Leu Pro Asn Leu Ser Thr Ile Asn Leu Gly Ile Asn Phe 225 230 235 240	721
att aag caa atc gat ttc aaa ctt ttc caa aat ttc tcc aat ctg gaa Ile Lys Gln Ile Asp Phe Lys Leu Phe Gln Asn Phe Ser Asn Leu Glu 245 250 255	769
att att tac ttg tca gaa aac aga ata tca ccg ttg gta aaa gat acc Ile Ile Tyr Leu Ser Glu Asn Arg Ile Ser Pro Leu Val Lys Asp Thr 260 265 270	817
cgg cag agt tat gca aat agt tcc tct ttt caa cgt cat atc cgg aaa Arg Gln Ser Tyr Ala Asn Ser Ser Ser Phe Gln Arg His Ile Arg Lys 275 280 285	865
cga cgc tca aca gat ttt gag ttt gac cca cat tcg aac ttt tat cat Arg Arg Ser Thr Asp Phe Glu Phe Asp Pro His Ser Asn Phe Tyr His 290 295 300	913

ttc acc cgt cct tta ata aag cca caa tgt gct gct tat gga aaa gcc	961
Phe Thr Arg Pro Leu Ile Lys Pro Gln Cys Ala Ala Tyr Gly Lys Ala	
305 310 315 320	

tta gat tta agc ctc aac agt att ttc tt	990
Leu Asp Leu Ser Leu Asn Ser Ile Phe	
325	

<210> 16  
 <211> 329  
 <212> PRT  
 <213> Homo sapiens

<400> 16

Asn Ser Arg Leu Ile Asn Leu Lys Asn Leu Tyr Leu Ala Trp Asn Cys
1 5 10 15

Tyr Phe Asn Lys Val Cys Glu Lys Thr Asn Ile Glu Asp Gly Val Phe
20 25 30

Glu Thr Leu Thr Asn Leu Glu Leu Leu Ser Leu Ser Phe Asn Ser Leu
35 40 45

Ser His Val Pro Pro Lys Leu Pro Ser Ser Leu Arg Lys Leu Phe Leu
50 55 60

Ser Asn Thr Gln Ile Lys Tyr Ile Ser Glu Glu Asp Phe Lys Gly Leu
65 70 75 80

Ile Asn Leu Thr Leu Leu Asp Leu Ser Gly Asn Cys Pro Arg Cys Phe
85 90 95

Asn Ala Pro Phe Pro Cys Val Pro Cys Asp Gly Gly Ala Ser Ile Asn
100 105 110

Ile Asp Arg Phe Ala Phe Gln Asn Leu Thr Gln Leu Arg Tyr Leu Asn
115 120 125

Leu Ser Ser Thr Ser Leu Arg Lys Ile Asn Ala Ala Trp Phe Lys Asn
130 135 140

Met Pro His Leu Lys Val Leu Asp Leu Glu Phe Asn Tyr Leu Val Gly
145 150 155 160

Glu Ile Ala Ser Gly Ala Phe Leu Thr Met Leu Pro Arg Leu Glu Ile
165 170 175

Leu Asp Leu Ser Phe Asn Tyr Ile Lys Gly Ser Tyr Pro Gln His Ile

180	185	190
Asn Ile Ser Arg Asn Phe Ser Lys Leu Leu Ser Leu Arg Ala Leu His		
195	200	205
Leu Arg Gly Tyr Val Phe Gln Glu Leu Arg Glu Asp Asp Phe Gln Pro		
210	215	220
Leu Met Gln Leu Pro Asn Leu Ser Thr Ile Asn Leu Gly Ile Asn Phe		
225	230	235
Ile Lys Gln Ile Asp Phe Lys Leu Phe Gln Asn Phe Ser Asn Leu Glu		
245	250	255
Ile Ile Tyr Leu Ser Glu Asn Arg Ile Ser Pro Leu Val Lys Asp Thr		
260	265	270
Arg Gln Ser Tyr Ala Asn Ser Ser Ser Phe Gln Arg His Ile Arg Lys		
275	280	285
Arg Arg Ser Thr Asp Phe Glu Phe Asp Pro His Ser Asn Phe Tyr His		
290	295	300
Phe Thr Arg Pro Leu Ile Lys Pro Gln Cys Ala Ala Tyr Gly Lys Ala		
305	310	315
Leu Asp Leu Ser Leu Asn Ser Ile Phe		
325		

<210> 17  
 <211> 1543  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1) .. (513)  
 <223>

<400> 17	
cag tct ctt tcc aca tcc caa act ttc tat gat gct tac att tct tat	48
Gln Ser Leu Ser Thr Ser Gln Thr Phe Tyr Asp Ala Tyr Ile Ser Tyr	
1 5 10 15	
gac acc aaa gat gcc tct gtt act gac tgg gtg ata aat gag ctg cgc	96
Asp Thr Lys Asp Ala Ser Val Thr Asp Trp Val Ile Asn Glu Leu Arg	
20 25 30	
tac cac ctt gaa gag agc cga gac aaa aac gtt ctc ctt tgt cta gag	144
Tyr His Leu Glu Glu Ser Arg Asp Lys Asn Val Leu Leu Cys Leu Glu	

35	40	45	
gag agg gat tgg gac ccg gga ttg gcc atc atc gac aac ctc atg cag Glu Arg Asp Trp Asp Pro Gly Leu Ala Ile Ile Asp Asn Leu Met Gln 50 55 60			192
agc atc aac caa agc aag aaa aca gta ttt gtt tta acc aaa aaa tat Ser Ile Asn Gln Ser Lys Lys Thr Val Phe Val Leu Thr Lys Lys Tyr 65 70 75 80			240
gca aaa agc tgg aac ttt aaa aca gct ttt tac ttg gsc ttg cag agg Ala Lys Ser Trp Asn Phe Lys Thr Ala Phe Tyr Leu Xaa Leu Gln Arg 85 90 95			288
cta atg ggt gag aac atg gat gtg att ata ttt atc ctg ctg gag cca Leu Met Gly Glu Asn Met Asp Val Ile Ile Phe Ile Leu Leu Glu Pro 100 105 110			336
gtg tta cag cat tct ccg tat ttg agg cta cgg cag cgg atc tgt aag Val Leu Gln His Ser Pro Tyr Leu Arg Leu Arg Gln Arg Ile Cys Lys 115 120 125			384
agc tcc atc ctc cag tgg cct gac aac ccg aag gca gaa agg ttg ttt Ser Ser Ile Leu Gln Trp Pro Asp Asn Pro Lys Ala Glu Arg Leu Phe 130 135 140			432
tgg caa act ctg wga aat gtg gtc ttg act gaa aat gat tca cgg tat Trp Gln Thr Leu Xaa Asn Val Val Leu Thr Glu Asn Asp Ser Arg Tyr 145 150 155 160			480
aac aat atg tat gtc gat tcc att aag caa tac taactgacgt taagtcatga Asn Asn Met Tyr Val Asp Ser Ile Lys Gln Tyr 165 170			533
tttcgcgcca taataaagat gcaaaggaat gacatttcgt attagttatc tattgctagg			593
taacaaatta tcccaaaaac ttagtggttt aaaacaacac atttgctggc ccacagtttt			653
tgagggtcag gagtccaggc ccagcataac tgggtcttct gcttcagggt gtctcagagg			713
ctgcaatgta ggtgttcacc agagacatag gcatcactgg ggtcacactc atgtggttgt			773
tttctggatt caattcctcc tgggctattg gccaaaggct atactcatgt aagccatgcg			833
agcctatccc acaaggcagc ttgcttcac cagagctagca aaaaagagag gttgctagca			893
agatgaagtc acaatctttt gtaatcgaat caaaaaagtg atatctcatc actttggcca			953
tattctattt gttagaagta aaccacaggt cccaccagct ccatgggagt gaccacctca			1013
gtccagggaa aacagctgaa gaccaagatg gtgagctctg attgcttcag ttgggtcatca			1073
actattttcc cttgactgct gtccctgggat ggccggctat cttgatggat agattgtgaa			1133
tatcaggagg ccagggatca ctgtggacca tcttagcagt tgacctaaaca catcttcttt			1193
tcaatatcta agaacttttg ccaactgtgac taatggctct aatattaagc tgttgtttat			1253
atztatcata tatctatggc tacatgggta tattatgctg tgggtgcggt cggttttatt			1313
tacagttgct tttaaaaata tttgctgtaa catttgactt ctaagggtta gatgccattt			1373

aagaactgag atggatagct tttaaagcat cttttacttc ttaccatttt ttaaaagtat 1433  
gcagctaaat tcgaagcttt tggcttatat tggttaattgc cattgctgta aatcttaaaa 1493  
tgaatgaata aaaatgtttc atttttaaaaa aaaaaaaaaa aaaaaaaaaa 1543

<210> 18  
<211> 171  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (93)..(93)  
<223> The 'Xaa' at location 93 stands for Gly, or Ala.

<220>  
<221> misc\_feature  
<222> (149)..(149)  
<223> The 'Xaa' at location 149 stands for Arg, or a stop codon.

<400> 18

Gln Ser Leu Ser Thr Ser Gln Thr Phe Tyr Asp Ala Tyr Ile Ser Tyr  
1 5 10 15

Asp Thr Lys Asp Ala Ser Val Thr Asp Trp Val Ile Asn Glu Leu Arg  
20 25 30

Tyr His Leu Glu Glu Ser Arg Asp Lys Asn Val Leu Leu Cys Leu Glu  
35 40 45

Glu Arg Asp Trp Asp Pro Gly Leu Ala Ile Ile Asp Asn Leu Met Gln  
50 55 60

Ser Ile Asn Gln Ser Lys Lys Thr Val Phe Val Leu Thr Lys Lys Tyr  
65 70 75 80

Ala Lys Ser Trp Asn Phe Lys Thr Ala Phe Tyr Leu Xaa Leu Gln Arg  
85 90 95

Leu Met Gly Glu Asn Met Asp Val Ile Ile Phe Ile Leu Leu Glu Pro  
100 105 110

Val Leu Gln His Ser Pro Tyr Leu Arg Leu Arg Gln Arg Ile Cys Lys  
115 120 125

Ser Ser Ile Leu Gln Trp Pro Asp Asn Pro Lys Ala Glu Arg Leu Phe  
130 135 140



Trp Gln Thr Leu Xaa Asn Val Val Leu Thr Glu Asn Asp Ser Arg Tyr  
 145 150 155 160

Asn Asn Met Tyr Val Asp Ser Ile Lys Gln Tyr  
 165 170

<210> 19  
 <211> 629  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)..(486)  
 <223>

<400> 19  
 aat gaa ttg atc ccc aat cta gag aag gaa gat ggt tct atc ttg att 48  
 Asn Glu Leu Ile Pro Asn Leu Glu Lys Glu Asp Gly Ser Ile Leu Ile  
 1 5 10 15  
 tgc ctt tat gaa agc tac ttt gac cct ggc aaa agc att agt gaa aat 96  
 Cys Leu Tyr Glu Ser Tyr Phe Asp Pro Gly Lys Ser Ile Ser Glu Asn  
 20 25 30  
 att gta agc ttc att gag aaa agc tat aag tcc atc ttt gtt ttg tcy 144  
 Ile Val Ser Phe Ile Glu Lys Ser Tyr Lys Ser Ile Phe Val Leu Xaa  
 35 40 45  
 ccc aac ttt gtc cag aat gag tgg tgc cat tat gaa ttc tac ttt gcc 192  
 Pro Asn Phe Val Gln Asn Glu Trp Cys His Tyr Glu Phe Tyr Phe Ala  
 50 55 60  
 cac cac aat ctc ttc cat gaa aat tct gat cay ata att ctt atc tta 240  
 His His Asn Leu Phe His Glu Asn Ser Asp His Ile Ile Leu Ile Leu  
 65 70 75 80  
 ctg gaa ccc att cca ttc tat tgc att ccc acc agg tat cat aaa ctg 288  
 Leu Glu Pro Ile Pro Phe Tyr Cys Ile Pro Thr Arg Tyr His Lys Leu  
 85 90 95  
 gaa gct ctc ctg gaa aaa aaa gca tac ttg gaa tgg ccc aag gat agg 336  
 Glu Ala Leu Leu Glu Lys Lys Ala Tyr Leu Glu Trp Pro Lys Asp Arg  
 100 105 110  
 cgt aaa tgt ggg ctt ttc tgg gca aac ctt cga gct gct gtt aat gtt 384  
 Arg Lys Cys Gly Leu Phe Trp Ala Asn Leu Arg Ala Ala Val Asn Val  
 115 120 125  
 aat gta tta gcc acc aga gaa atg tat gaa ctg cag aca ttc aca gag 432  
 Asn Val Leu Ala Thr Arg Glu Met Tyr Glu Leu Gln Thr Phe Thr Glu  
 130 135 140  
 tta aat gaa gag tct cga ggt tct aca atc tct ctg atg aga aca gac 480  
 Leu Asn Glu Glu Ser Arg Gly Ser Thr Ile Ser Leu Met Arg Thr Asp  
 145 150 155 160  
 tgt cta taaaatccca cagtccttgg gaagttgggg accacataca ctgttgggat 536

Cys Leu

gtacattgat acaaccttta tgatggcaat ttgacaatat ttattaaaat aaaaaatggt 596

tattcccttc aaaaaaaaaa aaaaaaaaaa aaa 629

<210> 20

<211> 162

<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (48)..(48)

<223> The 'Xaa' at location 48 stands for Ser.

<400> 20

Asn Glu Leu Ile Pro Asn Leu Glu Lys Glu Asp Gly Ser Ile Leu Ile  
1 5 10 15

Cys Leu Tyr Glu Ser Tyr Phe Asp Pro Gly Lys Ser Ile Ser Glu Asn  
20 25 30

Ile Val Ser Phe Ile Glu Lys Ser Tyr Lys Ser Ile Phe Val Leu Xaa  
35 40 45

Pro Asn Phe Val Gln Asn Glu Trp Cys His Tyr Glu Phe Tyr Phe Ala  
50 55 60

His His Asn Leu Phe His Glu Asn Ser Asp His Ile Ile Leu Ile Leu  
65 70 75 80

Leu Glu Pro Ile Pro Phe Tyr Cys Ile Pro Thr Arg Tyr His Lys Leu  
85 90 95

Glu Ala Leu Leu Glu Lys Lys Ala Tyr Leu Glu Trp Pro Lys Asp Arg  
100 105 110

Arg Lys Cys Gly Leu Phe Trp Ala Asn Leu Arg Ala Ala Val Asn Val  
115 120 125

Asn Val Leu Ala Thr Arg Glu Met Tyr Glu Leu Gln Thr Phe Thr Glu  
130 135 140

Leu Asn Glu Glu Ser Arg Gly Ser Thr Ile Ser Leu Met Arg Thr Asp  
145 150 155 160

Cys Leu

<210> 21  
 <211> 427  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)..(426)  
 <223>

<400> 21  
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 Glu His Asp Ser Ala Trp Val Lys Ser Glu Leu Val Pro Tyr Leu Glu  
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 Lys Glu Asp Ile Gln Ile Cys Leu His Glu Arg Asn Phe Val Pro Gly  
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 Lys Ser Ile Val Glu Asn Ile Ile Asn Cys Ile Glu Lys Ser Tyr Lys  
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 Ser Ile Phe Val Leu Ser Pro Asn Phe Val Gln Ser Glu Trp Cys His  
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 Tyr Glu Leu Tyr Phe Ala His His Asn Leu Phe His Glu Gly Ser Asn  
 85 90 95  
 aac tta atc ctc atc tta ctg gaa ccc att cca cag aac agc att ccc 336  
 Asn Leu Ile Leu Ile Leu Leu Glu Pro Ile Pro Gln Asn Ser Ile Pro  
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Lys Ser Ile Val Glu Asn Ile Ile Asn Cys Ile Glu Lys Ser Tyr Lys  
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Ser Ile Phe Val Leu Ser Pro Asn Phe Val Gln Ser Glu Trp Cys His  
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Tyr Glu Leu Tyr Phe Ala His His Asn Leu Phe His Glu Gly Ser Asn  
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Asn Leu Ile Leu Ile Leu Leu Glu Pro Ile Pro Gln Asn Ser Ile Pro  
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Ile

662

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<223> The 'Xaa' at location 106 stands for Ile, Val, Leu, or Phe.

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<223> The 'Xaa' at location 127 stands for Lys, Arg, Thr, or Met.

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Ser Trp Arg Ser Ala Val Gly Ala Gly His Ser Ala Cys Ala Trp Arg  
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Asn Ala Thr Gly Cys Leu Ala Lys Pro Ser Leu Arg Thr Cys Gly Pro  
 65 70 75 80

Arg Ser Met Ala Ala Ala Arg Arg Cys Leu Cys Trp Pro Thr Arg Thr  
 85 90 95

Gly Ser Val Val Ser Cys Ala Pro Xaa Xaa Leu Leu Ala Gln Gln Arg  
 100 105 110

Leu Leu Glu Asp Arg Lys Asp Val Val Val Leu Val Ile Leu Xaa Pro  
 115 120 125

Asp Gly Gln Ala Ser Arg Leu Xaa Asp Ala Leu Thr Ser Ala Ser Ala  
 130 135 140

Ala Arg Val Ser Ser Ser Gly Pro Thr Ser Pro Val Val Ala Gln Leu  
 145 150 155 160

Leu Arg Pro Ala Cys Met Ala Leu Thr Arg Asp Asn His His Phe Tyr  
 165 170 175

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Ile

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 Met Ser Ala  
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 Ser Arg Leu Ala Gly Thr Leu Ile Pro Ala Met Ala Phe Leu Ser Cys  
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 Val Arg Pro Glu Ser Trp Glu Pro Cys Val Glu Val Pro Asn Ile Thr  
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 Tyr Gln Cys Met Glu Leu Asn Phe Tyr Lys Ile Pro Asp Asn Leu Pro  
 15 20 25  
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 Gly Ser Tyr Ser Phe Phe Ser Phe Pro Glu Leu Gln Val Leu Asp Leu  
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 Ser Arg Cys Glu Ile Gln Thr Ile Glu Asp Gly Ala Tyr Gln Ser Leu  
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 Ser His Leu Ser Thr Leu Ile Leu Thr Gly Asn Pro Ile Gln Ser Leu  
 80 85 90  
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 Ala Leu Gly Ala Phe Ser Gly Leu Ser Ser Leu Gln Lys Leu Val Ala  
 95 100 105  
 gtg gag aca aat cta gca tct cta gag aac ttc ccc att gga cat ctc 547  
 Val Glu Thr Asn Leu Ala Ser Leu Glu Asn Phe Pro Ile Gly His Leu  
 110 115 120 125  
 aaa act ttg aaa gaa ctt aat gtg gct cac aat ctt atc caa tct ttc 595  
 Lys Thr Leu Lys Glu Leu Asn Val Ala His Asn Leu Ile Gln Ser Phe  
 130 135 140  
 aaa tta cct gag tat ttt tct aat ctg acc aat cta gag cac ttg gac 643  
 Lys Leu Pro Glu Tyr Phe Ser Asn Leu Thr Asn Leu Glu His Leu Asp  
 145 150 155  
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Leu	Ser	Phe	Asn	Gly	Val	Ile	Thr	Met	Ser	Ser	Asn	Phe	Leu	Gly	Leu															
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gaa	caa	cta	gaa	cat	ctg	gat	ttc	cag	cat	tcc	aat	ttg	aaa	caa	atg	1411														
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Asn Leu Pro Phe Ser Thr Lys Asn Leu Asp Leu Ser Phe Asn Pro Leu  
30 35 40

Arg His Leu Gly Ser Tyr Ser Phe Phe Ser Phe Pro Glu Leu Gln Val  
45 50 55

Leu Asp Leu Ser Arg Cys Glu Ile Gln Thr Ile Glu Asp Gly Ala Tyr  
60 65 70

Gln Ser Leu Ser His Leu Ser Thr Leu Ile Leu Thr Gly Asn Pro Ile  
75 80 85 90

Gln Ser Leu Ala Leu Gly Ala Phe Ser Gly Leu Ser Ser Leu Gln Lys  
95 100 105

Leu Val Ala Val Glu Thr Asn Leu Ala Ser Leu Glu Asn Phe Pro Ile  
110 115 120

Gly His Leu Lys Thr Leu Lys Glu Leu Asn Val Ala His Asn Leu Ile  
125 130 135

Gln Ser Phe Lys Leu Pro Glu Tyr Phe Ser Asn Leu Thr Asn Leu Glu  
140 145 150

His Leu Asp Leu Ser Ser Asn Lys Ile Gln Ser Ile Tyr Cys Thr Asp  
155 160 165 170

Leu Arg Val Leu His Gln Met Pro Leu Leu Asn Leu Ser Leu Asp Leu  
175 180 185

Ser Leu Asn Pro Met Asn Phe Ile Gln Pro Gly Ala Phe Lys Glu Ile  
190 195 200

Arg Leu His Lys Leu Thr Leu Arg Asn Asn Phe Asp Ser Leu Asn Val

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Ala	Tyr	Leu	Asp	Tyr	Tyr	Leu	Asp	Asp	Ile	Ile	Asp	Leu	Phe	Asn	Cys
			270					275						280	
Leu	Thr	Asn	Val	Ser	Ser	Phe	Ser	Leu	Val	Ser	Val	Thr	Ile	Glu	Arg
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Val	Lys	Asp	Phe	Ser	Tyr	Asn	Phe	Gly	Trp	Gln	His	Leu	Glu	Leu	Val
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Asn	Cys	Lys	Phe	Gly	Gln	Phe	Pro	Thr	Leu	Lys	Leu	Lys	Ser	Leu	Lys
315					320					325					330
Arg	Leu	Thr	Phe	Thr	Ser	Asn	Lys	Gly	Gly	Asn	Ala	Phe	Ser	Glu	Val
				335					340					345	
Asp	Leu	Pro	Ser	Leu	Glu	Phe	Leu	Asp	Leu	Ser	Arg	Asn	Gly	Leu	Ser
			350					355					360		
Phe	Lys	Gly	Cys	Cys	Ser	Gln	Ser	Asp	Phe	Gly	Thr	Thr	Ser	Leu	Lys
		365					370					375			
Tyr	Leu	Asp	Leu	Ser	Phe	Asn	Gly	Val	Ile	Thr	Met	Ser	Ser	Asn	Phe
380						385					390				
Leu	Gly	Leu	Glu	Gln	Leu	Glu	His	Leu	Asp	Phe	Gln	His	Ser	Asn	Leu
395					400					405					410
Lys	Gln	Met	Ser	Glu	Phe	Ser	Val	Phe	Leu	Ser	Leu	Arg	Asn	Leu	Ile
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Tyr	Leu	Asp	Ile	Ser	His	Thr	His	Thr	Arg	Val	Ala	Phe	Asn	Gly	Ile
			430					435						440	
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Thr Phe Leu Asp Leu Ser Gln Cys Gln Leu Glu Gln Leu Ser Pro Thr  
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Ala Phe Asn Ser Leu Ser Ser Leu Gln Val Leu Asn Met Ser His Asn  
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Asn Phe Phe Ser Leu Asp Thr Phe Pro Tyr Lys Cys Leu Asn Ser Leu  
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Gln Val Leu Asp Tyr Ser Leu Asn His Ile Met Thr Ser Lys Lys Gln  
525 530 535

Glu Leu Gln His Phe Pro Ser Ser Leu Ala Phe Leu Asn Leu Thr Gln  
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Asn Asp Phe Ala Cys Thr Cys Glu His Gln Ser Phe Leu Gln Trp Ile  
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Lys Asp Gln Arg Gln Leu Leu Val Glu Val Glu Arg Met Glu Cys Ala  
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Thr Pro Ser Asp Lys Gln Gly Met Pro Val Leu Ser Leu Asn Ile Thr  
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Cys Gln Met Asn Lys Thr Ile Ile Gly Val Ser Val Leu Ser Val Leu  
605 610 615

Val Val Ser Val Val Ala Val Leu Val Tyr Lys Phe Tyr Phe His Leu  
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Met Leu Leu Ala Gly Cys Ile Lys Tyr Gly Arg Gly Glu Asn Ile Tyr  
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Asp Ala Phe Val Ile Tyr Ser Ser Gln Asp Glu Asp Trp Val Arg Asn  
655 660 665

Glu Leu Val Lys Asn Leu Glu Glu Gly Val Pro Pro Phe Gln Leu Cys  
670 675 680

Leu His Tyr Arg Asp Phe Ile Pro Gly Val Ala Ile Ala Ala Asn Ile  
685 690 695

Ile His Glu Gly Phe His Lys Ser Arg Lys Val Ile Val Val Val Ser  
700 705 710

Gln His Phe Ile Gln Ser Arg Trp Cys Ile Phe Glu Tyr Glu Ile Ala  
715 720 725 730

Gln Thr Trp Gln Phe Leu Ser Ser Arg Ala Gly Ile Ile Phe Ile Val  
735 740 745

Leu Gln Lys Val Glu Lys Thr Leu Leu Arg Gln Gln Val Glu Leu Tyr  
750 755 760

Arg Leu Leu Ser Arg Asn Thr Tyr Leu Glu Trp Glu Asp Ser Val Leu  
765 770 775

Gly Arg His Ile Phe Trp Arg Arg Leu Arg Lys Ala Leu Leu Asp Gly  
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Val Leu Ser Leu Lys Asp Asn Asn Val Thr Ala Val Pro Thr Thr Leu  
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cca cct aat tta cta gag ctc tat ctt tat aac aat atc att aag aaa 144  
Pro Pro Asn Leu Leu Glu Leu Tyr Leu Tyr Asn Asn Ile Ile Lys Lys  
35 40 45

atc caa gaa aat gat ttc aat aac ctc aat gag ttg caa gtc ctt gac 192  
Ile Gln Glu Asn Asp Phe Asn Asn Leu Asn Glu Leu Gln Val Leu Asp  
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cta cgt gga aat tgc cct cga tgt cat aat gtc cca tat ccg tgt aca 240  
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Ser	Ser	Thr	Asp	
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Ile Gln Glu Asn Asp Phe Asn Asn Leu Asn Glu Leu Gln Val Leu Asp  
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Met	Pro	Pro	Asn	Leu	Lys	Asn	Leu	Ser	Leu	Ala	Lys	Asn	Gly	Leu	Lys	
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Ser	Phe	Phe	Trp	Asp	Arg	Leu	Gln	Leu	Leu	Lys	His	Leu	Glu	Ile	Leu	
		35				40					45					
gac	ctc	agc	cat	aac	cag	ctg	aca	aaa	gta	cct	gag	aga	ttg	gcc	aac	192
Asp	Leu	Ser	His	Asn	Gln	Thr	Lys	Val	Pro	Glu	Arg	Leu	Ala	Asn		
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Cys	Ser	Lys	Ser	Leu	Thr	Thr	Leu	Ile	Leu	Lys	His	Asn	Gln	Ile	Arg	
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Gln	Leu	Thr	Lys	Tyr	Phe	Leu	Glu	Asp	Ala	Leu	Gln	Leu	Arg	Tyr	Leu	
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Asp	Ile	Ser	Ser	Asn	Lys	Ile	Gln	Val	Ile	Gln	Lys	Thr	Ser	Phe	Pro	
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gaa	aat	gtc	ctc	aac	aat	ctg	gag	atg	ttg	gtt	tta	cat	cac	aat	cgc	384
Glu	Asn	Val	Leu	Asn	Asn	Leu	Glu	Met	Leu	Val	Leu	His	His	Asn	Arg	
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Phe	Leu	Cys	Asn	Cys	Asp	Ala	Val	Trp	Phe	Val	Trp	Trp	Val	Asn	His	
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Thr	Asp	Val	Thr	Ile	Pro	Tyr	Leu	Ala	Thr	Asp	Val	Thr	Cys	Val	Gly	
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Pro	Gly	Ala	His	Lys	Gly	Gln	Ser	Val	Ile	Ser	Leu	Asp	Leu	Tyr	Thr	
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Cys	Glu	Leu	Asp	Leu	Thr	Asn	Leu	Ile	Leu	Phe	Ser	Val	Ser	Ile	Ser	
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Ser	Val	Leu	Phe	Leu	Met	Val	Val	Met	Thr	Thr	Ser	His	Leu	Phe	Phe	
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Trp	Asp	Met	Trp	Tyr	Ile	Tyr	Tyr	Phe	Trp	Lys	Ala	Lys	Ile	Lys	Gly	
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Tyr	Pro	Ala	Ser	Ala	Ile	Pro	Trp	Ser	Pro	Cys	Tyr	Asp	Ala	Phe	Ile	
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Val	Tyr	Asp	Thr	Lys	Asn	Ser	Ala	Val	Thr	Glu	Trp	Val	Leu	Gln	Glu	

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Ser	Gln	Ser	Ile	Gln	Leu	Ser	Lys	Lys	Thr	Val	Phe	Val	Met	Thr	Gln					
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Gln	Arg	Leu	Leu	Asp	Glu	Lys	Val	Asp	Val	Ile	Ile	Leu	Ile	Phe	Leu					
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Glu	Arg	Pro	Leu	Gln	Lys	Ser	Lys	Phe	Leu	Gln	Leu	Arg	Lys	Arg	Leu					
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Ser Phe Phe Trp Asp Arg Leu Gln Leu Leu Lys His Leu Glu Ile Leu  
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Asp Leu Ser His Asn Gln Leu Thr Lys Val Pro Glu Arg Leu Ala Asn  
50 55 60

Cys Ser Lys Ser Leu Thr Thr Leu Ile Leu Lys His Asn Gln Ile Arg  
65 70 75 80

Gln Leu Thr Lys Tyr Phe Leu Glu Asp Ala Leu Gln Leu Arg Tyr Leu  
85 90 95

Asp Ile Ser Ser Asn Lys Ile Gln Val Ile Gln Lys Thr Ser Phe Pro  
100 105 110

Glu Asn Val Leu Asn Asn Leu Glu Met Leu Val Leu His His Asn Arg  
115 120 125

Phe Leu Cys Asn Cys Asp Ala Val Trp Phe Val Trp Trp Val Asn His  
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Thr Asp Val Thr Ile Pro Tyr Leu Ala Thr Asp Val Thr Cys Val Gly  
145 150 155 160

Pro Gly Ala His Lys Gly Gln Ser Val Ile Ser Leu Asp Leu Tyr Thr  
165 170 175

Cys Glu Leu Asp Leu Thr Asn Leu Ile Leu Phe Ser Val Ser Ile Ser  
180 185 190

Ser Val Leu Phe Leu Met Val Val Met Thr Thr Ser His Leu Phe Phe  
195 200 205

Trp Asp Met Trp Tyr Ile Tyr Tyr Phe Trp Lys Ala Lys Ile Lys Gly  
210 215 220

Tyr Pro Ala Ser Ala Ile Pro Trp Ser Pro Cys Tyr Asp Ala Phe Ile  
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Val Tyr Asp Thr Lys Asn Ser Ala Val Thr Glu Trp Val Leu Gln Glu  
 245 250 255

Leu Val Ala Lys Leu Glu Asp Pro Arg Glu Lys His Phe Asn Leu Cys  
 260 265 270

Leu Glu Glu Arg Asp Trp Leu Pro Gly Gln Pro Val Leu Glu Asn Leu  
 275 280 285

Ser Gln Ser Ile Gln Leu Ser Lys Lys Thr Val Phe Val Met Thr Gln  
 290 295 300

Lys Tyr Ala Lys Thr Glu Ser Phe Lys Met Ala Phe Tyr Leu Ser His  
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Gln Arg Leu Leu Asp Glu Lys Val Asp Val Ile Ile Leu Ile Phe Leu  
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Glu Arg Pro Leu Gln Lys Ser Lys Phe Leu Gln Leu Arg Lys Arg Leu  
 340 345 350

Cys Arg Ser Ser Val Leu Glu Trp Pro Ala Asn Pro Gln Ala His Pro  
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Val	Ala	Phe	Cys	Cys	Leu	His	Phe	Asp	Leu	Pro	Trp	Tyr	Leu	Arg	Met		
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cta	ggc	caa	tgc	aca	caa	aca	tgg	cac	agg	gtt	agg	aaa	aca	acc	caa	289	
Leu	Gly	Gln	Cys	Thr	Gln	Thr	Trp	His	Arg	Val	Arg	Lys	Thr	Thr	Gln		
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Glu	Gln	Leu	Lys	Arg	Asn	Val	Arg	Phe	His	Ala	Phe	Ile	Ser	Tyr	Ser		
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Lys	Glu	Asp	Gly	Ser	Ile	Leu	Ile	Cys	Leu	Tyr	Glu	Ser	Tyr	Phe	Asp		
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Pro	Gly	Lys	Ser	Ile	Ser	Glu	Asn	Ile	Val	Ser	Phe	Ile	Glu	Lys	Ser		
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Tyr	Lys	Ser	Ile	Phe	Val	Leu	Ser	Pro	Asn	Phe	Val	Gln	Asn	Glu	Trp		
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Cys	His	Tyr	Glu	Phe	Tyr	Phe	Ala	His	His	Asn	Leu	Phe	His	Glu	Asn		
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Ser	Asp	His	Ile	Ile	Leu	Ile	Leu	Leu	Glu	Pro	Ile	Pro	Phe	Tyr	Cys		
		195					200					205					
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Ile	Pro	Thr	Arg	Tyr	His	Lys	Leu	Glu	Ala	Leu	Leu	Glu	Lys	Lys	Ala		
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Thr Ile Ser Leu Met Arg Thr Asp Cys Leu			
275	280		
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Thr Arg Leu Lys Asp Val His Leu His Glu Leu Ser Cys Asn Thr Ala
35 40 45

Leu Leu Ile Val Thr Ile Val Val Ile Met Leu Val Leu Gly Leu Ala
50 55 60

Val Ala Phe Cys Cys Leu His Phe Asp Leu Pro Trp Tyr Leu Arg Met
65 70 75 80

Leu Gly Gln Cys Thr Gln Thr Trp His Arg Val Arg Lys Thr Thr Gln
85 90 95

Glu Gln Leu Lys Arg Asn Val Arg Phe His Ala Phe Ile Ser Tyr Ser
100 105 110

Glu His Asp Ser Leu Trp Val Lys Asn Glu Leu Ile Pro Asn Leu Glu
115 120 125

Lys Glu Asp Gly Ser Ile Leu Ile Cys Leu Tyr Glu Ser Tyr Phe Asp
130 135 140

Pro Gly Lys Ser Ile Ser Glu Asn Ile Val Ser Phe Ile Glu Lys Ser
145 150 155 160

Tyr Lys Ser Ile Phe Val Leu Ser Pro Asn Phe Val Gln Asn Glu Trp





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ccg ggc cag ctc	cag ggc ctc agc atc ttt gca cag gac ctg cgc ctc	336					
Pro Gly Gln Leu	Gln Gly Leu Ser Ile Phe Ala Gln Asp Leu Arg Leu						
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tgc ctg gat gag	gcc ctc tcc tgg gac tgt ttc gcc ctc tcg ctg ctg	384					
Cys Leu Asp Glu	Ala Leu Ser Trp Asp Cys Phe Ala Leu Ser Leu Leu						
	115 120 125						
gct gtg gct ctg	ggc ctg ggt gtg ccc atg ctg cat cac ctc tgt ggc	432					
Ala Val Ala Leu	Gly Leu Gly Val Pro Met Leu His His Leu Cys Gly						
	130 135 140						
tgg gac ctc tgg	tac tgc ttc cac ctg tgc ctg gcc tgg ctt ccc tgg	480					
Trp Asp Leu Trp	Tyr Cys Phe His Leu Cys Leu Ala Trp Leu Pro Trp						
	145 150 155 160						
cgg ggg cgg caa	agt ggg cga gat gag gat gcc ctg ccc tac gat gcc	528					
Arg Gly Arg Gln	Ser Gly Arg Asp Glu Asp Ala Leu Pro Tyr Asp Ala						
	165 170 175						
ttc gtg gtc ttc	gac aaa acg cag agc gca gtg gca gac tgg gtg tac	576					
Phe Val Val Phe	Asp Lys Thr Gln Ser Ala Val Ala Asp Trp Val Tyr						
	180 185 190						
aac gag ctt cgg	ggg cag ctg gag gag tgc cgt ggg cgc tgg gca ctc	624					
Asn Glu Leu Arg	Gly Gln Leu Glu Glu Cys Arg Gly Arg Trp Ala Leu						
	195 200 205						
cgc ctg tgc ctg	gag gaa cgc gac tgg ctg cct ggc aaa acc ctc ttt	672					
Arg Leu Cys Leu	Glu Glu Arg Asp Trp Leu Pro Gly Lys Thr Leu Phe						
	210 215 220						
gag aac ctg tgg	gcc tcg gtc tat ggc agc cgc aag acg ctg ttt gtg	720					
Glu Asn Leu Trp	Ala Ser Val Tyr Gly Ser Arg Lys Thr Leu Phe Val						
	225 230 235 240						
ctg gcc cac acg	gac cgg gtc agt ggt ctc ttg cgc gcc agc ttc ctg	768					
Leu Ala His Thr	Asp Arg Val Ser Gly Leu Leu Arg Ala Ser Phe Leu						
	245 250 255						
ctg gcc cag cag	cgc ctg ctg gag gac cgc aag gac gtc gtg gtg ctg	816					
Leu Ala Gln Gln	Arg Leu Leu Glu Asp Arg Lys Asp Val Val Val Leu						
	260 265 270						
gtg atc ctg agc	cct gac ggc cgc cgc tcc cgc tac gag cgg ctg cgc	864					
Val Ile Leu Ser	Pro Asp Gly Arg Arg Ser Arg Tyr Glu Arg Leu Arg						
	275 280 285						
cag cgc ctc tgc	cgc cag agt gtc ctc ctc tgg ccc cac cag ccc agt	912					
Gln Arg Leu Cys	Arg Gln Ser Val Leu Leu Trp Pro His Gln Pro Ser						
	290 295 300						
ggt cag cgc agc	ttc tgg gcc cag ctg ggc atg gcc ctg acc agg gac	960					
Gly Gln Arg Ser	Phe Trp Ala Gln Leu Gly Met Ala Leu Thr Arg Asp						
	305 310 315 320						

aac cac cac ttc tat aac cgg aac ttc tgc cag gga ccc acg gcc gaa 1008  
 Asn His His Phe Tyr Asn Arg Asn Phe Cys Gln Gly Pro Thr Ala Glu  
 325 330 335  
 tagccgtgag ccggaatcct gcacggtgcc acctccacac tcacctcacc tctgcctgcc 1068  
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Phe Gly Pro Leu Ala Ser Ala Leu Gln Ile Leu Asp Val Ser Ala Asn  
 50 55 60

Pro Leu His Cys Ala Cys Gly Ala Ala Phe Met Asp Phe Leu Leu Glu  
 65 70 75 80

Val Gln Ala Ala Val Pro Gly Leu Pro Ser Arg Val Lys Cys Gly Ser  
 85 90 95

Pro Gly Gln Leu Gln Gly Leu Ser Ile Phe Ala Gln Asp Leu Arg Leu  
 100 105 110

Cys Leu Asp Glu Ala Leu Ser Trp Asp Cys Phe Ala Leu Ser Leu Leu  
 115 120 125

Ala Val Ala Leu Gly Leu Gly Val Pro Met Leu His His Leu Cys Gly  
 130 135 140

Trp Asp Leu Trp Tyr Cys Phe His Leu Cys Leu Ala Trp Leu Pro Trp  
 145 150 155 160

Arg Gly Arg Gln Ser Gly Arg Asp Glu Asp Ala Leu Pro Tyr Asp Ala  
 165 170 175

Phe Val Val Phe Asp Lys Thr Gln Ser Ala Val Ala Asp Trp Val Tyr  
180 185 190

Asn Glu Leu Arg Gly Gln Leu Glu Glu Cys Arg Gly Arg Trp Ala Leu  
195 200 205

Arg Leu Cys Leu Glu Glu Arg Asp Trp Leu Pro Gly Lys Thr Leu Phe  
210 215 220

Glu Asn Leu Trp Ala Ser Val Tyr Gly Ser Arg Lys Thr Leu Phe Val  
225 230 235 240

Leu Ala His Thr Asp Arg Val Ser Gly Leu Leu Arg Ala Ser Phe Leu  
245 250 255

Leu Ala Gln Gln Arg Leu Leu Glu Asp Arg Lys Asp Val Val Val Leu  
260 265 270

Val Ile Leu Ser Pro Asp Gly Arg Arg Ser Arg Tyr Glu Arg Leu Arg  
275 280 285

Gln Arg Leu Cys Arg Gln Ser Val Leu Leu Trp Pro His Gln Pro Ser  
290 295 300

Gly Gln Arg Ser Phe Trp Ala Gln Leu Gly Met Ala Leu Thr Arg Asp  
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cgtcccgcta tgtgcgactg cgccagcgtc tctgccgcca gagtgtgctc ttctggcccc 180  
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cagctggaaa cagctgcata ttcattgtctg gttcccgagt tgctctgcct gccttgctct 360  
gtcttactac accgctatct ggcaagtgcg caatatatgc taccaagcca ccaggccccc 420

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 Met Leu Thr Cys Ile Phe Leu Leu Ile Ser Gly Ser Cys Glu Leu Cys  
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gcc gaa gaa aat ttt tct aga agc tat cct tgt gat gag aaa aag caa 96  
 Ala Glu Glu Asn Phe Ser Arg Ser Tyr Pro Cys Asp Glu Lys Lys Gln  
 -1 1 5 10 15

aat gac tca gtt att gca gag tgc agc aat cgt cga cta cag gaa gtt 144  
 Asn Asp Ser Val Ile Ala Glu Cys Ser Asn Arg Arg Leu Gln Glu Val  
 20 25 30

ccc caa acg gtg ggc aaa tat gtg aca gaa cta gac ctg tct gat aat 192  
 Pro Gln Thr Val Gly Lys Tyr Val Thr Glu Leu Asp Leu Ser Asp Asn  
 35 40 45

ttc atc aca cac ata acg aat gaa tca ttt caa ggg ctg caa aat ctc 240  
 Phe Ile Thr His Ile Thr Asn Glu Ser Phe Gln Gly Leu Gln Asn Leu  
 50 55 60

act aaa ata aat cta aac cac aac ccc aat gta cag cac cag aac gga 288  
 Thr Lys Ile Asn Leu Asn His Asn Pro Asn Val Gln His Gln Asn Gly  
 65 70 75

aat ccc ggt ata caa tca aat ggc ttg aat atc aca gac ggg gca ttc 336  
 Asn Pro Gly Ile Gln Ser Asn Gly Leu Asn Ile Thr Asp Gly Ala Phe  
 80 85 90 95

ctc aac cta aaa aac cta agg gag tta ctg ctt gaa gac aac cag tta 384  
 Leu Asn Leu Lys Asn Leu Arg Glu Leu Leu Leu Glu Asp Asn Gln Leu  
 100 105 110

ccc caa ata ccc tct ggt ttg cca gag tct ttg aca gaa ctt agt cta 432  
 Pro Gln Ile Pro Ser Gly Leu Pro Glu Ser Leu Thr Glu Leu Ser Leu  
 115 120 125

att caa aac aat ata tac aac ata act aaa gag ggc att tca aga ctt 480

Ile Gln Asn Asn Ile Tyr Asn Ile Thr Lys Glu Gly Ile Ser Arg Leu	
130 135 140	
ata aac ttg aaa aat ctc tat ttg gcc tgg aac tgc tat ttt aac aaa	528
Ile Asn Leu Lys Asn Leu Tyr Leu Ala Trp Asn Cys Tyr Phe Asn Lys	
145 150 155	
gtt tgc gag aaa act aac ata gaa gat gga gta ttt gaa acg ctg aca	576
Val Cys Glu Lys Thr Asn Ile Glu Asp Gly Val Phe Glu Thr Leu Thr	
160 165 170 175	
aat ttg gag ttg cta tca cta tct ttc aat tct ctt tca cat gtg cca	624
Asn Leu Glu Leu Ser Leu Ser Phe Asn Ser Leu Ser His Val Pro	
180 185 190	
ccc aaa ctg cca agc tcc cta cgc aaa ctt ttt ctg agc aac acc cag	672
Pro Lys Leu Pro Ser Ser Leu Arg Lys Leu Phe Leu Ser Asn Thr Gln	
195 200 205	
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Ile Lys Tyr Ile Ser Glu Glu Asp Phe Lys Gly Leu Ile Asn Leu Thr	
210 215 220	
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Leu Leu Asp Leu Ser Gly Asn Cys Pro Arg Cys Phe Asn Ala Pro Phe	
225 230 235	
cca tgc gtg cct tgt gat ggt ggt gct tca att aat ata gat cgt ttt	816
Pro Cys Val Pro Cys Asp Gly Gly Ala Ser Ile Asn Ile Asp Arg Phe	
240 245 250 255	
gct ttt caa aac ttg acc caa ctt cga tac cta aac ctc tct agc act	864
Ala Phe Gln Asn Leu Thr Gln Leu Arg Tyr Leu Asn Leu Ser Ser Thr	
260 265 270	
tcc ctc agg aag att aat gct gcc tgg ttt aaa aat atg cct cat ctg	912
Ser Leu Arg Lys Ile Asn Ala Ala Trp Phe Lys Asn Met Pro His Leu	
275 280 285	
aag gtg ctg gat ctt gaa ttc aac tat tta gtg gga gaa ata gcc tct	960
Lys Val Leu Asp Leu Glu Phe Asn Tyr Leu Val Gly Glu Ile Ala Ser	
290 295 300	
ggg gca ttt tta acg atg ctg ccc cgc tta gaa ata ctt gac ttg tct	1008
Gly Ala Phe Leu Thr Met Leu Pro Arg Leu Glu Ile Leu Asp Leu Ser	
305 310 315	
ttt aac tat ata aag ggg agt tat cca cag cat att aat att tcc aga	1056
Phe Asn Tyr Ile Lys Gly Ser Tyr Pro Gln His Ile Asn Ile Ser Arg	
320 325 330 335	
aac ttc tct aaa ctt ttg tct cta cgg gca ttg cat tta aga ggt tat	1104
Asn Phe Ser Lys Leu Leu Ser Leu Arg Ala Leu His Leu Arg Gly Tyr	
340 345 350	
gtg ttc cag gaa ctc aga gaa gat gat ttc cag ccc ctg atg cag ctt	1152
Val Phe Gln Glu Leu Arg Glu Asp Asp Phe Gln Pro Leu Met Gln Leu	
355 360 365	
cca aac tta tcg act atc aac ttg ggt att aat ttt att aag caa atc	1200
Pro Asn Leu Ser Thr Ile Asn Leu Gly Ile Asn Phe Ile Lys Gln Ile	

370					375					380						
gat	ttc	aaa	ctt	ttc	caa	aat	ttc	tcc	aat	ctg	gaa	att	att	tac	ttg	1248
Asp	Phe	Lys	Leu	Phe	Gln	Asn	Phe	Ser	Asn	Leu	Glu	Ile	Ile	Tyr	Leu	
	385					390					395					
tca	gaa	aac	aga	ata	tca	ccg	ttg	gta	aaa	gat	acc	cgg	cag	agt	tat	1296
Ser	Glu	Asn	Arg	Ile	Ser	Pro	Leu	Val	Lys	Asp	Thr	Arg	Gln	Ser	Tyr	
400					405					410					415	
gca	aat	agt	tcc	tct	ttt	caa	cgt	cat	atc	cgg	aaa	cga	cgc	tca	aca	1344
Ala	Asn	Ser	Ser	Ser	Phe	Gln	Arg	His	Ile	Arg	Lys	Arg	Arg	Ser	Thr	
				420					425					430		
gat	ttt	gag	ttt	gac	cca	cat	tcg	aac	ttt	tat	cat	ttc	acc	cgt	cct	1392
Asp	Phe	Glu	Phe	Asp	Pro	His	Ser	Asn	Phe	Tyr	His	Phe	Thr	Arg	Pro	
			435					440					445			
tta	ata	aag	cca	caa	tgt	gct	gct	tat	gga	aaa	gcc	tta	gat	tta	agc	1440
Leu	Ile	Lys	Pro	Gln	Cys	Ala	Ala	Tyr	Gly	Lys	Ala	Leu	Asp	Leu	Ser	
		450					455					460				
ctc	aac	agt	att	ttc	ttc	att	ggg	cca	aac	caa	ttt	gaa	aat	ctt	cct	1488
Leu	Asn	Ser	Ile	Phe	Phe	Ile	Gly	Pro	Asn	Gln	Phe	Glu	Asn	Leu	Pro	
	465					470					475					
gac	att	gcc	tgt	tta	aat	ctg	tct	gca	aat	agc	aat	gct	caa	gtg	tta	1536
Asp	Ile	Ala	Cys	Leu	Asn	Leu	Ser	Ala	Asn	Ser	Asn	Ala	Gln	Val	Leu	
480					485					490					495	
agt	gga	act	gaa	ttt	tca	gcc	att	cct	cat	gtc	aaa	tat	ttg	gat	ttg	1584
Ser	Gly	Thr	Glu	Phe	Ser	Ala	Ile	Pro	His	Val	Lys	Tyr	Leu	Asp	Leu	
			500						505					510		
aca	aac	aat	aga	cta	gac	ttt	gat	aat	gct	agt	gct	ctt	act	gaa	ttg	1632
Thr	Asn	Asn	Arg	Leu	Asp	Phe	Asp	Asn	Ala	Ser	Ala	Leu	Thr	Glu	Leu	
			515					520					525			
tcc	gac	ttg	gaa	gtt	cta	gat	ctc	agc	tat	aat	tca	cac	tat	ttc	aga	1680
Ser	Asp	Leu	Glu	Val	Leu	Asp	Leu	Ser	Tyr	Asn	Ser	His	Tyr	Phe	Arg	
		530					535					540				
ata	gca	ggc	gta	aca	cat	cat	cta	gaa	ttt	att	caa	aat	ttc	aca	aat	1728
Ile	Ala	Gly	Val	Thr	His	His	Leu	Glu	Phe	Ile	Gln	Asn	Phe	Thr	Asn	
	545					550					555					
cta	aaa	gtt	tta	aac	ttg	agc	cac	aac	aac	att	tat	act	tta	aca	gat	1776
Leu	Lys	Val	Leu	Asn	Leu	Ser	His	Asn	Asn	Ile	Tyr	Thr	Leu	Thr	Asp	
560				565						570					575	
aag	tat	aac	ctg	gaa	agc	aag	tcc	ctg	gta	gaa	tta	gtt	ttc	agt	ggc	1824
Lys	Tyr	Asn	Leu	Glu	Ser	Lys	Ser	Leu	Val	Glu	Leu	Val	Phe	Ser	Gly	
			580					585						590		
aat	cgc	ctt	gac	att	ttg	tgg	aat	gat	gat	gac	aac	agg	tat	atc	tcc	1872
Asn	Arg	Leu	Asp	Ile	Leu	Trp	Asn	Asp	Asp	Asp	Asn	Arg	Tyr	Ile	Ser	
			595				600						605			
att	ttc	aaa	ggg	ctc	aag	aat	ctg	aca	cgt	ctg	gat	tta	tcc	ctt	aat	1920
Ile	Phe	Lys	Gly	Leu	Lys	Asn	Leu	Thr	Arg	Leu	Asp	Leu	Ser	Leu	Asn	
		610					615					620				

agg ctc aag cac atc cca aat gaa gca ttc ctt aat ttg cca gcg agt Arg Leu Lys His Ile Pro Asn Glu Ala Phe Leu Asn Leu Pro Ala Ser 625 630 635	1968
ctc act gaa cta cat ata aat gat aat atg tta aag ttt ttt aac tgg Leu Thr Glu Leu His Ile Asn Asp Asn Met Leu Lys Phe Phe Asn Trp 640 645 650 655	2016
aca tta ctc cag cag ttt cct cgt ctc gag ttg ctt gac tta cgt gga Thr Leu Leu Gln Gln Phe Pro Arg Leu Glu Leu Leu Asp Leu Arg Gly 660 665 670	2064
aac aaa cta ctc ttt tta act gat agc cta tct gac ttt aca tct tcc Asn Lys Leu Leu Phe Leu Thr Asp Ser Leu Ser Asp Phe Thr Ser Ser 675 680 685	2112
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aat ctg cta aaa aca atm aac aaa tcc gca ctt gaa act aag acc acc Asn Leu Leu Lys Thr Xaa Asn Lys Ser Ala Leu Glu Thr Lys Thr Thr 720 725 730 735	2256
acc aaa tta tct atg ttg gaa cta cac gga aac ccc ttt gaa tgc acc Thr Lys Leu Ser Met Leu Glu Leu His Gly Asn Pro Phe Glu Cys Thr 740 745 750	2304
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aaa att ccc aga ctg gta gat gtc att tgt gcc agt cct ggg gat caa Lys Ile Pro Arg Leu Val Asp Val Ile Cys Ala Ser Pro Gly Asp Gln 770 775 780	2400
aga ggg aag agt att gtg agt ctg gag cta aca act tgt gtt tca gat Arg Gly Lys Ser Ile Val Ser Leu Glu Leu Thr Thr Cys Val Ser Asp 785 790 795	2448
gtc act gca gtg ata tta ttt ttc ttc acg ttc ttt atc acc acc atg Val Thr Ala Val Ile Leu Phe Phe Phe Thr Phe Phe Ile Thr Thr Met 800 805 810 815	2496
gtt atg ttg gct gcc ctg gct cac cat ttg ttt tac tgg gat gtt tgg Val Met Leu Ala Ala Leu Ala His His Leu Phe Tyr Trp Asp Val Trp 820 825 830	2544
ttt ata tat aat gtg tgt tta gct aag tta aaa ggc tac agg tct ctt Phe Ile Tyr Asn Val Cys Leu Ala Lys Leu Lys Gly Tyr Arg Ser Leu 835 840 845	2592
tcc aca tcc caa act ttc tat gat gct tac att tct tat gac acc aaa Ser Thr Ser Gln Thr Phe Tyr Asp Ala Tyr Ile Ser Tyr Asp Thr Lys 850 855 860	2640

gat gcc tct gtt act gac tgg gtg ata aat gag ctg cgc tac cac ctt	2688
Asp Ala Ser Val Thr Asp Trp Val Ile Asn Glu Leu Arg Tyr His Leu	
865 870 875	

gaa gag agc cga gac aaa aac gtt ctc ctt tgt cta gag gag agg gat	2736
Glu Glu Ser Arg Asp Lys Asn Val Leu Leu Cys Leu Glu Glu Arg Asp	
880 885 890 895	

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Trp Asp Pro Gly Leu Ala Ile Ile Asp Asn Leu Met Gln Ser Ile Asn	
900 905 910	

caa agc aag aaa aca gta ttt gtt tta acc aaa aaa tat gca aaa agc	2832
Gln Ser Lys Lys Thr Val Phe Val Leu Thr Lys Lys Tyr Ala Lys Ser	
915 920 925	

tgg aac ttt aaa aca gct ttt tac ttg gcc ttg cag agg cta atg ggt	2880
Trp Asn Phe Lys Thr Ala Phe Tyr Leu Ala Leu Gln Arg Leu Met Gly	
930 935 940	

gag aac atg gat gtg att ata ttt atc ctg ctg gag cca gtg tta cag	2928
Glu Asn Met Asp Val Ile Ile Phe Ile Leu Leu Glu Pro Val Leu Gln	
945 950 955	

cat tct ccg tat ttg agg cta cgg cag cgg atc tgt aag agc tcc atc	2976
His Ser Pro Tyr Leu Arg Leu Arg Gln Arg Ile Cys Lys Ser Ser Ile	
960 965 970 975	

ctc cag tgg cct gac aac ccg aag gca gaa ggc ttg ttt tgg caa act	3024
Leu Gln Trp Pro Asp Asn Pro Lys Ala Glu Gly Leu Phe Trp Gln Thr	
980 985 990	

ctg aga aat gtg gtc ttg act gaa aat gat tca cgg tat aac aat atg	3072
Leu Arg Asn Val Val Leu Thr Glu Asn Asp Ser Arg Tyr Asn Asn Met	
995 1000 1005	

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Tyr Val Asp Ser Ile Lys Gln Tyr	
1010 1015	

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-1 1 5 10 15



Asn Asp Ser Val Ile Ala Glu Cys Ser Asn Arg Arg Leu Gln Glu Val  
 20 25 30

Pro Gln Thr Val Gly Lys Tyr Val Thr Glu Leu Asp Leu Ser Asp Asn  
 35 40 45

Phe Ile Thr His Ile Thr Asn Glu Ser Phe Gln Gly Leu Gln Asn Leu  
 50 55 60

Thr Lys Ile Asn Leu Asn His Asn Pro Asn Val Gln His Gln Asn Gly  
 65 70 75

Asn Pro Gly Ile Gln Ser Asn Gly Leu Asn Ile Thr Asp Gly Ala Phe  
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Leu Asn Leu Lys Asn Leu Arg Glu Leu Leu Leu Glu Asp Asn Gln Leu  
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Pro Gln Ile Pro Ser Gly Leu Pro Glu Ser Leu Thr Glu Leu Ser Leu  
 115 120 125

Ile Gln Asn Asn Ile Tyr Asn Ile Thr Lys Glu Gly Ile Ser Arg Leu  
 130 135 140

Ile Asn Leu Lys Asn Leu Tyr Leu Ala Trp Asn Cys Tyr Phe Asn Lys  
 145 150 155

Val Cys Glu Lys Thr Asn Ile Glu Asp Gly Val Phe Glu Thr Leu Thr  
 160 165 170 175

Asn Leu Glu Leu Leu Ser Leu Ser Phe Asn Ser Leu Ser His Val Pro  
 180 185 190

Pro Lys Leu Pro Ser Ser Leu Arg Lys Leu Phe Leu Ser Asn Thr Gln  
 195 200 205

Ile Lys Tyr Ile Ser Glu Glu Asp Phe Lys Gly Leu Ile Asn Leu Thr  
 210 215 220

Leu Leu Asp Leu Ser Gly Asn Cys Pro Arg Cys Phe Asn Ala Pro Phe  
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Pro Cys Val Pro Cys Asp Gly Gly Ala Ser Ile Asn Ile Asp Arg Phe  
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Ala Phe Gln Asn Leu Thr Gln Leu Arg Tyr Leu Asn Leu Ser Ser Thr

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Ser	Leu	Arg	Lys	Ile	Asn	Ala	Ala	Trp	Phe	Lys	Asn	Met	Pro	His	Leu				
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Lys	Val	Leu	Asp	Leu	Glu	Phe	Asn	Tyr	Leu	Val	Gly	Glu	Ile	Ala	Ser				
		290					295					300							
Gly	Ala	Phe	Leu	Thr	Met	Leu	Pro	Arg	Leu	Glu	Ile	Leu	Asp	Leu	Ser				
	305					310					315								
Phe	Asn	Tyr	Ile	Lys	Gly	Ser	Tyr	Pro	Gln	His	Ile	Asn	Ile	Ser	Arg				
320					325						330				335				
Asn	Phe	Ser	Lys	Leu	Leu	Ser	Leu	Arg	Ala	Leu	His	Leu	Arg	Gly	Tyr				
				340					345					350					
Val	Phe	Gln	Glu	Leu	Arg	Glu	Asp	Asp	Phe	Gln	Pro	Leu	Met	Gln	Leu				
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Pro	Asn	Leu	Ser	Thr	Ile	Asn	Leu	Gly	Ile	Asn	Phe	Ile	Lys	Gln	Ile				
		370					375					380							
Asp	Phe	Lys	Leu	Phe	Gln	Asn	Phe	Ser	Asn	Leu	Glu	Ile	Ile	Tyr	Leu				
	385					390					395								
Ser	Glu	Asn	Arg	Ile	Ser	Pro	Leu	Val	Lys	Asp	Thr	Arg	Gln	Ser	Tyr				
400					405						410				415				
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				420					425					430					
Asp	Phe	Glu	Phe	Asp	Pro	His	Ser	Asn	Phe	Tyr	His	Phe	Thr	Arg	Pro				
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Arg Leu Lys His Ile Pro Asn Glu Ala Phe Leu Asn Leu Pro Ala Ser  
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Thr Lys Leu Ser Met Leu Glu Leu His Gly Asn Pro Phe Glu Cys Thr  
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Cys Asp Ile Gly Asp Phe Arg Arg Trp Met Asp Glu His Leu Asn Val  
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Lys Ile Pro Arg Leu Val Asp Val Ile Cys Ala Ser Pro Gly Asp Gln  
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Phe Ile Tyr Asn Val Cys Leu Ala Lys Leu Lys Gly Tyr Arg Ser Leu  
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Ser Thr Ser Gln Thr Phe Tyr Asp Ala Tyr Ile Ser Tyr Asp Thr Lys  
850 855 860

Asp Ala Ser Val Thr Asp Trp Val Ile Asn Glu Leu Arg Tyr His Leu  
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Glu Glu Ser Arg Asp Lys Asn Val Leu Leu Cys Leu Glu Glu Arg Asp  
880 885 890 895

Trp Asp Pro Gly Leu Ala Ile Ile Asp Asn Leu Met Gln Ser Ile Asn  
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Gln Ser Lys Lys Thr Val Phe Val Leu Thr Lys Lys Tyr Ala Lys Ser  
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Trp Asn Phe Lys Thr Ala Phe Tyr Leu Ala Leu Gln Arg Leu Met Gly  
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Glu Asn Met Asp Val Ile Ile Phe Ile Leu Leu Glu Pro Val Leu Gln  
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 Thr Thr Leu Asp Leu Ser Tyr Asn Leu Leu Phe Gln Leu Gln Ser Ser  
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 Asp Phe His Ser Val Ser Lys Leu Arg Val Leu Ile Leu Cys His Asn  
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Ala	His	Leu	His	Leu	Asn	Thr	Val	Phe	Leu	Gly	Phe	Arg	Thr	Leu	Pro		
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His	Tyr	Glu	Glu	Gly	Ser	Leu	Pro	Ile	Leu	Asn	Thr	Thr	Lys	Leu	His		
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Val	His	Phe	Arg	Val	Phe	Tyr	Ile	Gln	Gln	Asp	Lys	Ile	Tyr	Leu	Leu		
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cca	cac	atg	ctt	ttc	ccg	aat	tat	cct	acg	aaa	ttc	caa	tat	tta	aat		1172
Pro	His	Met	Leu	Phe	Pro	Asn	Tyr	Pro	Thr	Lys	Phe	Gln	Tyr	Leu	Asn		
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Phe	Ala	Asn	Asn	Ile	Leu	Thr	Asp	Glu	Leu	Phe	Lys	Arg	Thr	Ile	Gln		

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Ser Ser Asp Phe His Ser Val Ser Lys Leu Arg Val Leu Ile Leu Cys	
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Glu Ile Leu Gly Leu Ser Gly Ala Lys Ile Gln Lys Ser Asp Phe Gln	
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Asp Gly Ile Lys Thr Ser Lys Ile Leu Glu Met Thr Asn Ile Asp Gly  
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Lys Ser Gln Phe Val Ser Tyr Glu Met Gln Arg Asn Leu Ser Leu Glu  
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Val Cys Leu Met Ile Ile Ile Val Gly Thr Arg Ile Gln Phe Ser Asp  
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gtt ttc aag ttc aac cag gat tta gaa tat ttg gat tta tct cat aat 397  
Val Phe Lys Phe Asn Gln Asp Leu Glu Tyr Leu Asp Leu Ser His Asn  
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cag ttg caa aag ata tcc tgc cat cct att gtg agt ttc agg cat tta 445  
Gln Leu Gln Lys Ile Ser Cys His Pro Ile Val Ser Phe Arg His Leu  
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ctt ctg gat tta aga aat tat tat ata aaa gaa aat gag aca gaa agt 637  
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cta caa att ctg aat gca aaa acc ctt cac ctt gtt ttt cac cca act 685  
Leu Gln Ile Leu Asn Ala Lys Thr Leu His Leu Val Phe His Pro Thr  
160 165 170 175

agt tta ttc gct atc caa gtg aac ata tca gtt aat act tta ggg tgc 733  
Ser Leu Phe Ala Ile Gln Val Asn Ile Ser Val Asn Thr Leu Gly Cys  
180 185 190

tta caa ctg act aat att aaa ttg aat gat gac aac tgt caa gtt ttc 781

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Thr	Leu	Asn	His	Ile	Glu	Thr	Thr	Trp	Lys	Cys	Leu	Val	Arg	Val	Phe	
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Gln	Phe	Leu	Trp	Pro	Lys	Pro	Val	Glu	Tyr	Leu	Asn	Ile	Tyr	Asn	Leu	
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Phe	Ser	Gln	Thr	Ala	Leu	Tyr	Thr	Val	Phe	Ser	Glu	Met	Asn	Ile	Met	
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Asp	Ser	Ile	Phe	Glu	Lys	Cys	Ser	Thr	Leu	Val	Lys	Leu	Glu	Thr	Leu	
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Ile	Leu	Gln	Lys	Asn	Gly	Leu	Lys	Asp	Leu	Phe	Lys	Val	Gly	Leu	Met	
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Thr	Lys	Asp	Met	Pro	Ser	Leu	Glu	Ile	Leu	Asp	Val	Ser	Trp	Asn	Ser	
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Leu	Glu	Ser	Gly	Arg	His	Lys	Glu	Asn	Cys	Thr	Trp	Val	Glu	Ser	Ile	
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gtg	gtg	tta	aat	ttg	tct	tca	aat	atg	ctt	act	gac	tct	gtt	ttc	aga	1405
Val	Val	Leu	Asn	Leu	Ser	Ser	Asn	Met	Leu	Thr	Asp	Ser	Val	Phe	Arg	
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tgt	tta	cct	ccc	agg	atc	aag	gta	ctt	gat	ctt	cac	agc	aat	aaa	ata	1453
Cys	Leu	Pro	Pro	Arg	Ile	Lys	Val	Leu	Asp	Leu	His	Ser	Asn	Lys	Ile	
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aag	agc	gtt	cct	aaa	caa	gtc	gta	aaa	ctg	gaa	gct	ttg	caa	gaa	ctc	1501
Lys	Ser	Val	Pro	Lys	Gln	Val	Val	Lys	Leu	Glu	Ala	Leu	Gln	Glu	Leu	

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Ser Ser Leu Ser Val Leu Ile Ile Asp His Asn Ser Val Ser His Pro																				
465 470 475																				
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Ser Ala Asp Phe Phe Gln Ser Cys Gln Lys Met Arg Ser Ile Lys Ala																				
480 485 490 495																				
ggg gac aat cca ttc caa tgt acc tgt gag cta aga gaa ttt gtc aaa	1693																			
Gly Asp Asn Pro Phe Gln Cys Thr Cys Glu Leu Arg Glu Phe Val Lys																				
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Tyr Lys Cys Asp Tyr Pro Glu Ser Tyr Arg Gly Ser Pro Leu Lys Asp																				
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Ile Gly Ala Thr Met Leu Val Leu Ala Val Thr Val Thr Ser Leu Cys																				
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Ile Tyr Leu Asp Leu Pro Trp Tyr Leu Arg Met Val Cys Gln Trp Thr																				
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675 680 685																				

gcc cat cac aat ctc ttt cat gaa gga tct aat aac tta atc ctc atc	2269
Ala His His Asn Leu Phe His Glu Gly Ser Asn Asn Leu Ile Leu Ile	
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Leu Leu Glu Pro Ile Pro Gln Asn Ser Ile Pro Asn Lys Tyr His Lys	
705 710 715	
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Leu Lys Ala Leu Met Thr Gln Arg Thr Tyr Leu Gln Trp Pro Lys Glu	
720 725 730 735	
aaa agc aaa cgt ggg ctc ttt tgg gct aac att aga gcc gct ttt aat	2413
Lys Ser Lys Arg Gly Leu Phe Trp Ala Asn Ile Arg Ala Ala Phe Asn	
740 745 750	
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Met Lys Leu Thr Leu Val Thr Glu Asn Asn Asp Val Lys Ser	
755 760 765	
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Glu Phe Ala Val Asp Lys Ser Lys Arg Gly Leu Ile His Val Pro Lys
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Asp Leu Pro Leu Lys Thr Lys Val Leu Asp Met Ser Gln Asn Tyr Ile
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Ala Glu Leu Gln Val Ser Asp Met Ser Phe Leu Ser Glu Leu Thr Val  
35 40 45

Leu Arg Leu Ser His Asn Arg Ile Gln Leu Leu Asp Leu Ser Val Phe  
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Lys Phe Asn Gln Asp Leu Glu Tyr Leu Asp Leu Ser His Asn Gln Leu  
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Gln Lys Ile Ser Cys His Pro Ile Val Ser Phe Arg His Leu Asp Leu  
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Ser Phe Asn Asp Phe Lys Ala Leu Pro Ile Cys Lys Glu Phe Gly Asn  
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Leu Ser Gln Leu Asn Phe Leu Gly Leu Ser Ala Met Lys Leu Gln Lys  
115 120 125

Leu Asp Leu Leu Pro Ile Ala His Leu His Leu Ser Tyr Ile Leu Leu  
130 135 140 145

Asp Leu Arg Asn Tyr Tyr Ile Lys Glu Asn Glu Thr Glu Ser Leu Gln  
150 155 160

Ile Leu Asn Ala Lys Thr Leu His Leu Val Phe His Pro Thr Ser Leu  
165 170 175

Phe Ala Ile Gln Val Asn Ile Ser Val Asn Thr Leu Gly Cys Leu Gln  
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Leu Thr Asn Ile Lys Leu Asn Asp Asp Asn Cys Gln Val Phe Ile Lys  
195 200 205

Phe Leu Ser Glu Leu Thr Arg Gly Pro Thr Leu Leu Asn Phe Thr Leu  
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Asn His Ile Glu Thr Thr Trp Lys Cys Leu Val Arg Val Phe Gln Phe  
230 235 240

Leu Trp Pro Lys Pro Val Glu Tyr Leu Asn Ile Tyr Asn Leu Thr Ile  
245 250 255

Ile Glu Ser Ile Arg Glu Glu Asp Phe Thr Tyr Ser Lys Thr Thr Leu  
260 265 270

Lys Ala Leu Thr Ile Glu His Ile Thr Asn Gln Val Phe Leu Phe Ser  
275 280 285

Gln Thr Ala Leu Tyr Thr Val Phe Ser Glu Met Asn Ile Met Met Leu  
290 295 300 305

Thr Ile Ser Asp Thr Pro Phe Ile His Met Leu Cys Pro His Ala Pro  
310 315 320

Ser Thr Phe Lys Phe Leu Asn Phe Thr Gln Asn Val Phe Thr Asp Ser  
325 330 335

Ile Phe Glu Lys Cys Ser Thr Leu Val Lys Leu Glu Thr Leu Ile Leu  
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Gln Lys Asn Gly Leu Lys Asp Leu Phe Lys Val Gly Leu Met Thr Lys  
355 360 365

Asp Met Pro Ser Leu Glu Ile Leu Asp Val Ser Trp Asn Ser Leu Glu  
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Ser Gly Arg His Lys Glu Asn Cys Thr Trp Val Glu Ser Ile Val Val  
390 395 400

Leu Asn Leu Ser Ser Asn Met Leu Thr Asp Ser Val Phe Arg Cys Leu  
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Pro Pro Arg Ile Lys Val Leu Asp Leu His Ser Asn Lys Ile Lys Ser  
420 425 430

Val Pro Lys Gln Val Val Lys Leu Glu Ala Leu Gln Glu Leu Asn Val  
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Ala Phe Asn Ser Leu Thr Asp Leu Pro Gly Cys Gly Ser Phe Ser Ser  
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Leu Ser Val Leu Ile Ile Asp His Asn Ser Val Ser His Pro Ser Ala  
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Asp Phe Phe Gln Ser Cys Gln Lys Met Arg Ser Ile Lys Ala Gly Asp  
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Asn Pro Phe Gln Cys Thr Cys Glu Leu Arg Glu Phe Val Lys Asn Ile  
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Asp Gln Val Ser Ser Glu Val Leu Glu Gly Trp Pro Asp Ser Tyr Lys

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Ala	Thr	Met	Leu	Val	Leu	Ala	Val	Thr	Val	Thr	Ser	Leu	Cys	Ile	Tyr	
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Gln	Phe	His	Ala	Phe	Ile	Ser	Tyr	Ser	Glu	His	Asp	Ser	Ala	Trp	Val	
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Lys	Ser	Glu	Leu	Val	Pro	Tyr	Leu	Glu	Lys	Glu	Asp	Ile	Gln	Ile	Cys	
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Leu	His	Glu	Arg	Asn	Phe	Val	Pro	Gly	Lys	Ser	Ile	Val	Glu	Asn	Ile	
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Ile	Asn	Cys	Ile	Glu	Lys	Ser	Tyr	Lys	Ser	Ile	Phe	Val	Leu	Ser	Pro	
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690					695					700					705	
Glu	Pro	Ile	Pro	Gln	Asn	Ser	Ile	Pro	Asn	Lys	Tyr	His	Lys	Leu	Lys	
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Ala	Leu	Met	Thr	Gln	Arg	Thr	Tyr	Leu	Gln	Trp	Pro	Lys	Glu	Lys	Ser	
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Lys	Arg	Gly	Leu	Phe	Trp	Ala	Asn	Ile	Arg	Ala	Ala	Phe	Asn	Met	Lys	
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 Pro Leu Ser Leu Leu Val Gln Ala Ile Met Leu Ala Met Thr Leu Ala  
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ctg gtg aac tgc aac tgg ctg ttc ctg aag tct gtg ccc cac ttc tcc 240  
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cgc atc cac cac ctc cat gat tct gac ttt gcc cac ctg ccc agc ctg 336  
 Arg Ile His His Leu His Asp Ser Asp Phe Ala His Leu Pro Ser Leu  
 50 55 60

cgg cat ctc aac ctc aag tgg aac tgc ccg ccg gtt ggc ctc agc ccc 384  
 Arg His Leu Asn Leu Lys Trp Asn Cys Pro Pro Val Gly Leu Ser Pro  
 65 70 75 80

atg cac ttc ccc tgc cac atg acc atc gag ccc agc acc ttc ttg gct 432  
 Met His Phe Pro Cys His Met Thr Ile Glu Pro Ser Thr Phe Leu Ala  
 85 90 95

gtg ccc acc ctg gaa gag cta aac ctg agc tac aac aac atc atg act 480  
 Val Pro Thr Leu Glu Glu Leu Asn Leu Ser Tyr Asn Asn Ile Met Thr  
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gtg cct gcg ctg ccc aaa tcc ctc ata tcc ctg tcc ctc agc cat acc 528

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Asn	Ile	Leu	Met	Leu	Asp	Ser	Ala	Ser	Leu	Ala	Gly	Leu	His	Ala	Leu		
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cgc	ttc	cta	ttc	atg	gac	ggc	aac	tgt	tat	tac	aag	aac	ccc	tgc	agg	624	
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Thr	His	Leu	Ser	Leu	Lys	Tyr	Asn	Asn	Leu	Thr	Val	Val	Pro	Arg	Asn		
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Leu	Pro	Ser	Ser	Leu	Glu	Tyr	Leu	Leu	Leu	Ser	Tyr	Asn	Arg	Ile	Val		
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Asp	Val	Gly	Gly	Asn	Cys	Arg	Arg	Cys	Asp	His	Ala	Pro	Asn	Pro	Cys		
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His	Leu	Ser	Arg	Leu	Glu	Gly	Leu	Val	Leu	Lys	Asp	Ser	Ser	Leu	Ser		
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tgg	ctg	aat	gcc	agt	tgg	ttc	cgt	ggg	ctg	gga	aac	ctc	cga	gtg	ctg	1008	
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Gln	Lys	Arg	Val	Ser	Phe	Ala	His	Leu	Ser	Leu	Ala	Pro	Ser	Phe	Gly		
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Ser	Leu	Val	Ala	Leu	Lys	Glu	Leu	Asp	Met	His	Gly	Ile	Phe	Phe	Arg		
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Gln	Thr	Leu	Arg	Leu	Gln	Met	Asn	Phe	Ile	Asn	Gln	Ala	Gln	Leu	Gly	
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Ile	Phe	Arg	Ala	Phe	Pro	Gly	Leu	Arg	Tyr	Val	Asp	Leu	Ser	Asp	Asn	
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cgc	atc	agc	gga	gct	tcg	gag	ctg	aca	gcc	acc	atg	ggg	gag	gca	gat	1392
Arg	Ile	Ser	Gly	Ala	Ser	Glu	Leu	Thr	Ala	Thr	Met	Gly	Glu	Ala	Asp	
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Gly	Gly	Glu	Lys	Val	Trp	Leu	Gln	Pro	Gly	Asp	Leu	Ala	Pro	Ala	Pro	
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Val	Asp	Thr	Pro	Ser	Ser	Glu	Asp	Phe	Arg	Pro	Asn	Cys	Ser	Thr	Leu	
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Glu	Met	Phe	Ala	Gln	Leu	Ser	His	Leu	Gln	Cys	Leu	Arg	Leu	Ser	His	
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Glu	His	Ser	Phe	Thr	Glu	Leu	Pro	Arg	Leu	Glu	Ala	Leu	Asp	Leu	Ser	
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Tyr	Asn	Ser	Gln	Pro	Phe	Gly	Met	Gln	Gly	Val	Gly	His	Asn	Phe	Ser	
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Phe	Val	Ala	His	Leu	Arg	Thr	Leu	Arg	His	Leu	Ser	Leu	Ala	His	Asn	
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Asn	Ile	His	Ser	Gln	Val	Ser	Gln	Gln	Leu	Cys	Ser	Thr	Ser	Leu	Arg	
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Ala	Leu	Asp	Phe	Ser	Gly	Asn	Ala	Leu	Gly	His	Met	Trp	Ala	Glu	Gly	
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gac	ctc	tat	ctg	cac	ttc	ttc	caa	ggc	ctg	agc	ggg	ttg	atc	tgg	ctg	1968
Asp	Leu	Tyr	Leu	His	Phe	Phe	Gln	Gly	Leu	Ser	Gly	Leu	Ile	Trp	Leu	
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aac ctc ccc aag agc cta cag gtg ctg cgt ctc cgt gac aat tac ctg Asn Leu Pro Lys Ser Leu Gln Val Leu Arg Leu Arg Asp Asn Tyr Leu 625 630 635 640	2064
gcc ttc ttt aag tgg tgg agc ctc cac ttc ctg ccc aaa ctg gaa gtc Ala Phe Phe Lys Trp Trp Ser Leu His Phe Leu Pro Lys Leu Glu Val 645 650 655	2112
ctc gac ctg gca gga aac cag ctg aag gcc ctg acc aat ggc agc ctg Leu Asp Leu Ala Gly Asn Gln Leu Lys Ala Leu Thr Asn Gly Ser Leu 660 665 670	2160
cct gct ggc acc cgg ctc cgg agg ctg gat gtc agc tgc aac agc atc Pro Ala Gly Thr Arg Leu Arg Arg Leu Asp Val Ser Cys Asn Ser Ile 675 680 685	2208
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cag gct gcc gtg ccc ggt ctg ccc agc cgg gtg aag tgt ggc agt ccg Gln Ala Ala Val Pro Gly Leu Pro Ser Arg Val Lys Cys Gly Ser Pro 755 760 765	2448
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gac ctc tgg tac tgc ttc cac ctg tgc ctg gcc tgg ctt ccc tgg cgg Asp Leu Trp Tyr Cys Phe His Leu Cys Leu Ala Trp Leu Pro Trp Arg 820 825 830	2640
ggg cgg caa agt ggg cga gat gag gat gcc ctg ccc tac gat gcc ttc Gly Arg Gln Ser Gly Arg Asp Glu Asp Ala Leu Pro Tyr Asp Ala Phe 835 840 845	2688

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Val Val Phe Asp Lys Thr Gln Ser Ala Val Ala Asp Trp Val Tyr Asn	
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Glu Leu Arg Gly Gln Leu Glu Glu Cys Arg Gly Arg Trp Ala Leu Arg	
865 870 875 880	
ctg tgc ctg gag gaa cgc gac tgg ctg cct ggc aaa acc ctc ttt gag	2832
Leu Cys Leu Glu Glu Arg Asp Trp Leu Pro Gly Lys Thr Leu Phe Glu	
885 890 895	
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Asn Leu Trp Ala Ser Val Tyr Gly Ser Arg Lys Thr Leu Phe Val Leu	
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gcc cac acg gac cgg gtc agt ggt ctc ttg cgc gcc agc ttc ctg ctg	2928
Ala His Thr Asp Arg Val Ser Gly Leu Leu Arg Ala Ser Phe Leu Leu	
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Ile Leu Ser Pro Asp Gly Arg Arg Ser Arg Tyr Val Arg Leu Arg Gln	
945 950 955 960	
cgc ctc tgc cgc cag agt gtc ctc ctc tgg ccc cac cag ccc agt ggt	3072
Arg Leu Cys Arg Gln Ser Val Leu Leu Trp Pro His Gln Pro Ser Gly	
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Gln Arg Ser Phe Trp Ala Gln Leu Gly Met Ala Leu Thr Arg Asp Asn	
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Leu Gly Thr Leu Pro Ala Phe Leu Pro Cys Glu Leu Gln Pro His Gly



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Met Ala Ala Pro Arg Gly Asn Val Thr Ser Leu Ser Leu Ser Ser Asn	35	40	45
Arg Ile His His Leu His Asp Ser Asp Phe Ala His Leu Pro Ser Leu	50	55	60
Arg His Leu Asn Leu Lys Trp Asn Cys Pro Pro Val Gly Leu Ser Pro	65	70	80
Met His Phe Pro Cys His Met Thr Ile Glu Pro Ser Thr Phe Leu Ala	85	90	95
Val Pro Thr Leu Glu Glu Leu Asn Leu Ser Tyr Asn Asn Ile Met Thr	100	105	110
Val Pro Ala Leu Pro Lys Ser Leu Ile Ser Leu Ser Leu Ser His Thr	115	120	125
Asn Ile Leu Met Leu Asp Ser Ala Ser Leu Ala Gly Leu His Ala Leu	130	135	140
Arg Phe Leu Phe Met Asp Gly Asn Cys Tyr Tyr Lys Asn Pro Cys Arg	145	150	155
Gln Ala Leu Glu Val Ala Pro Gly Ala Leu Leu Gly Leu Gly Asn Leu	165	170	175
Thr His Leu Ser Leu Lys Tyr Asn Asn Leu Thr Val Val Pro Arg Asn	180	185	190
Leu Pro Ser Ser Leu Glu Tyr Leu Leu Leu Ser Tyr Asn Arg Ile Val	195	200	205
Lys Leu Ala Pro Glu Asp Leu Ala Asn Leu Thr Ala Leu Arg Val Leu	210	215	220
Asp Val Gly Gly Asn Cys Arg Arg Cys Asp His Ala Pro Asn Pro Cys	225	230	235
Met Glu Cys Pro Arg His Phe Pro Gln Leu His Pro Asp Thr Phe Ser	245	250	255

His Leu Ser Arg Leu Glu Gly Leu Val Leu Lys Asp Ser Ser Leu Ser  
260 265 270

Trp Leu Asn Ala Ser Trp Phe Arg Gly Leu Gly Asn Leu Arg Val Leu  
275 280 285

Asp Leu Ser Glu Asn Phe Leu Tyr Lys Cys Ile Thr Lys Thr Lys Ala  
290 295 300

Phe Gln Gly Leu Thr Gln Leu Arg Lys Leu Asn Leu Ser Phe Asn Tyr  
305 310 315 320

Gln Lys Arg Val Ser Phe Ala His Leu Ser Leu Ala Pro Ser Phe Gly  
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Ser Leu Val Ala Leu Lys Glu Leu Asp Met His Gly Ile Phe Phe Arg  
340 345 350

Ser Leu Asp Glu Thr Thr Leu Arg Pro Leu Ala Arg Leu Pro Met Leu  
355 360 365

Gln Thr Leu Arg Leu Gln Met Asn Phe Ile Asn Gln Ala Gln Leu Gly  
370 375 380

Ile Phe Arg Ala Phe Pro Gly Leu Arg Tyr Val Asp Leu Ser Asp Asn  
385 390 395 400

Arg Ile Ser Gly Ala Ser Glu Leu Thr Ala Thr Met Gly Glu Ala Asp  
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Gly Gly Glu Lys Val Trp Leu Gln Pro Gly Asp Leu Ala Pro Ala Pro  
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Val Asp Thr Pro Ser Ser Glu Asp Phe Arg Pro Asn Cys Ser Thr Leu  
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Asn Phe Thr Leu Asp Leu Ser Arg Asn Asn Leu Val Thr Val Gln Pro  
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Glu Met Phe Ala Gln Leu Ser His Leu Gln Cys Leu Arg Leu Ser His  
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Asn Cys Ile Ser Gln Ala Val Asn Gly Ser Gln Phe Leu Pro Leu Thr  
485 490 495

Gly Leu Gln Val Leu Asp Leu Ser His Asn Lys Leu Asp Leu Tyr His  
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Glu His Ser Phe Thr Glu Leu Pro Arg Leu Glu Ala Leu Asp Leu Ser  
515 520 525

Tyr Asn Ser Gln Pro Phe Gly Met Gln Gly Val Gly His Asn Phe Ser  
530 535 540

Phe Val Ala His Leu Arg Thr Leu Arg His Leu Ser Leu Ala His Asn  
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Asn Ile His Ser Gln Val Ser Gln Gln Leu Cys Ser Thr Ser Leu Arg  
565 570 575

Ala Leu Asp Phe Ser Gly Asn Ala Leu Gly His Met Trp Ala Glu Gly  
580 585 590

Asp Leu Tyr Leu His Phe Phe Gln Gly Leu Ser Gly Leu Ile Trp Leu  
595 600 605

Asp Leu Ser Gln Asn Arg Leu His Thr Leu Leu Pro Gln Thr Leu Arg  
610 615 620

Asn Leu Pro Lys Ser Leu Gln Val Leu Arg Leu Arg Asp Asn Tyr Leu  
625 630 635 640

Ala Phe Phe Lys Trp Trp Ser Leu His Phe Leu Pro Lys Leu Glu Val  
645 650 655

Leu Asp Leu Ala Gly Asn Gln Leu Lys Ala Leu Thr Asn Gly Ser Leu  
660 665 670

Pro Ala Gly Thr Arg Leu Arg Arg Leu Asp Val Ser Cys Asn Ser Ile  
675 680 685

Ser Phe Val Ala Pro Gly Phe Phe Ser Lys Ala Lys Glu Leu Arg Glu  
690 695 700

Leu Asn Leu Ser Ala Asn Ala Leu Lys Thr Val Asp His Ser Trp Phe  
705 710 715 720

Gly Pro Leu Ala Ser Ala Leu Gln Ile Leu Asp Val Ser Ala Asn Pro  
725 730 735

Leu His Cys Ala Cys Gly Ala Ala Phe Met Asp Phe Leu Leu Glu Val  
 740 745 750

Gln Ala Ala Val Pro Gly Leu Pro Ser Arg Val Lys Cys Gly Ser Pro  
 755 760 765

Gly Gln Leu Gln Gly Leu Ser Ile Phe Ala Gln Asp Leu Arg Leu Cys  
 770 775 780

Leu Asp Glu Ala Leu Ser Trp Asp Cys Phe Ala Leu Ser Leu Leu Ala  
 785 790 795 800

Val Ala Leu Gly Leu Gly Val Pro Met Leu His His Leu Cys Gly Trp  
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Asp Leu Trp Tyr Cys Phe His Leu Cys Leu Ala Trp Leu Pro Trp Arg  
 820 825 830

Gly Arg Gln Ser Gly Arg Asp Glu Asp Ala Leu Pro Tyr Asp Ala Phe  
 835 840 845

Val Val Phe Asp Lys Thr Gln Ser Ala Val Ala Asp Trp Val Tyr Asn  
 850 855 860

Glu Leu Arg Gly Gln Leu Glu Glu Cys Arg Gly Arg Trp Ala Leu Arg  
 865 870 875 880

Leu Cys Leu Glu Glu Arg Asp Trp Leu Pro Gly Lys Thr Leu Phe Glu  
 885 890 895

Asn Leu Trp Ala Ser Val Tyr Gly Ser Arg Lys Thr Leu Phe Val Leu  
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Ala His Thr Asp Arg Val Ser Gly Leu Leu Arg Ala Ser Phe Leu Leu  
 915 920 925

Ala Gln Gln Arg Leu Leu Glu Asp Arg Lys Asp Val Val Val Leu Val  
 930 935 940

Ile Leu Ser Pro Asp Gly Arg Arg Ser Arg Tyr Val Arg Leu Arg Gln  
 945 950 955 960

Arg Leu Cys Arg Gln Ser Val Leu Leu Trp Pro His Gln Pro Ser Gly  
 965 970 975

Gln Arg Ser Phe Trp Ala Gln Leu Gly Met Ala Leu Thr Arg Asp Asn

980

985

990

His His Phe Tyr Asn Arg Asn Phe Cys Gln Gly Pro Thr Ala Glu  
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 Ala Thr Pro Glu Glu Ala Asp Asp Ala Glu Gln Glu Glu Leu Leu Ser  
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 Ala Asp Pro His Pro Ala Pro Leu Ser Thr Pro Ala Ser Lys Asn Phe  
 115 120 125  
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 Gln Cys Leu Ser Leu Ser His Asn Ser Ile Ala Gln Ala Val Asn Gly

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Leu	Glu	Ala	Leu	Asp	Leu	Ser	Tyr	Asn	Ser	Gln	Pro	Phe	Ser	Met	Lys					
	210					215					220									
ggg	ata	ggc	cac	aat	ttc	agt	ttt	gtg	acc	cat	ctg	tcc	atg	cta	cag	720				
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Phe	Leu	Pro	Asn	Leu	Glu	Val	Leu	Asp	Leu	Ala	Gly	Asn	Gln	Leu	Lys					
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Ala	Leu	Thr	Asn	Gly	Thr	Leu	Pro	Asn	Gly	Thr	Leu	Leu	Gln	Lys	Leu					
		355					360					365								
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Lys	Ala	Lys	Glu	Leu	Arg	Glu	Leu	Asn	Leu	Ser	Ala	Asn	Ala	Leu	Lys					
385					390					395					400					
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Thr	Val	Asp	His	Ser	Trp	Phe	Gly	Pro	Ile	Val	Met	Asn	Leu	Thr	Val					
				405					410					415						

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ctg cac cat ctc tgc ggc tgg gac gtc tgg tac tgt ttt cat ctg tgc Leu His His Leu Cys Gly Trp Asp Val Trp Tyr Cys Phe His Leu Cys 500 505 510	1536
ctg gca tgg cta cct ttg cta gcc cgc agc cga cgc agc gcc caa act Leu Ala Trp Leu Pro Leu Leu Ala Arg Ser Arg Arg Ser Ala Gln Thr 515 520 525	1584
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gcc gac tgg gtg tat aac gag ctg cgg gtg cgg ctg gag gag cgg cgc Ala Asp Trp Val Tyr Asn Glu Leu Arg Val Arg Leu Glu Glu Arg Arg 545 550 555 560	1680
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cgc acc agc ttc ctg ctg gct cag cag cgc ctg ttg gaa gac cgc aag Arg Thr Ser Phe Leu Leu Ala Gln Gln Arg Leu Leu Glu Asp Arg Lys 610 615 620	1872
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 675 680 685

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<400> 45

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Asn Gly Ile Phe Phe Arg Leu Leu Asn Lys Tyr Thr Leu Arg Trp Leu  
 35 40 45

Ala Asp Leu Pro Lys Leu His Thr Leu His Leu Gln Met Asn Phe Ile  
 50 55 60

Asn Gln Ala Gln Leu Ser Ile Phe Gly Thr Phe Arg Ala Leu Arg Phe  
 65 70 75 80

Val Asp Leu Ser Asp Asn Arg Ile Ser Gly Pro Ser Thr Leu Ser Glu  
 85 90 95

Ala Thr Pro Glu Glu Ala Asp Asp Ala Glu Gln Glu Glu Leu Leu Ser  
 100 105 110

Ala Asp Pro His Pro Ala Pro Leu Ser Thr Pro Ala Ser Lys Asn Phe  
 115 120 125

Met Asp Arg Cys Lys Asn Phe Lys Phe Asn Met Asp Leu Ser Arg Asn  
 130 135 140



Asn Leu Val Thr Ile Thr Ala Glu Met Phe Val Asn Leu Ser Arg Leu  
145 150 155 160

Gln Cys Leu Ser Leu Ser His Asn Ser Ile Ala Gln Ala Val Asn Gly  
165 170 175

Ser Gln Phe Leu Pro Leu Thr Gly Leu Gln Val Leu Asp Leu Ser His  
180 185 190

Asn Lys Leu Asp Leu Tyr His Glu His Ser Phe Thr Glu Leu Pro Arg  
195 200 205

Leu Glu Ala Leu Asp Leu Ser Tyr Asn Ser Gln Pro Phe Ser Met Lys  
210 215 220

Gly Ile Gly His Asn Phe Ser Phe Val Thr His Leu Ser Met Leu Gln  
225 230 235 240

Ser Leu Ser Leu Ala His Asn Asp Ile His Thr Arg Val Ser Ser His  
245 250 255

Leu Asn Ser Asn Ser Val Arg Phe Leu Asp Phe Ser Gly Asn Gly Met  
260 265 270

Gly Arg Met Trp Asp Glu Gly Gly Leu Tyr Leu His Phe Phe Gln Gly  
275 280 285

Leu Ser Gly Val Leu Lys Leu Asp Leu Ser Gln Asn Asn Leu His Ile  
290 295 300

Leu Arg Pro Gln Asn Leu Asp Asn Leu Pro Lys Ser Leu Lys Leu Leu  
305 310 315 320

Ser Leu Arg Asp Asn Tyr Leu Ser Phe Phe Asn Trp Thr Ser Leu Ser  
325 330 335

Phe Leu Pro Asn Leu Glu Val Leu Asp Leu Ala Gly Asn Gln Leu Lys  
340 345 350

Ala Leu Thr Asn Gly Thr Leu Pro Asn Gly Thr Leu Leu Gln Lys Leu  
355 360 365

Asp Val Ser Ser Asn Ser Ile Val Ser Val Ala Pro Gly Phe Phe Ser  
370 375 380

Lys Ala Lys Glu Leu Arg Glu Leu Asn Leu Ser Ala Asn Ala Leu Lys  
385 390 395 400

Thr Val Asp His Ser Trp Phe Gly Pro Ile Val Met Asn Leu Thr Val  
405 410 415

Leu Asp Val Arg Ser Asn Pro Leu His Cys Ala Cys Gly Ala Ala Phe  
420 425 430

Val Asp Leu Leu Leu Glu Val Gln Thr Lys Val Pro Gly Leu Ala Asn  
435 440 445

Gly Val Lys Cys Gly Ser Pro Gly Gln Leu Gln Gly Arg Ser Ile Phe  
450 455 460

Ala Gln Asp Leu Arg Leu Cys Leu Asp Glu Val Leu Ser Trp Asp Cys  
465 470 475 480

Phe Gly Leu Ser Leu Leu Ala Val Ala Val Gly Met Val Val Pro Ile  
485 490 495

Leu His His Leu Cys Gly Trp Asp Val Trp Tyr Cys Phe His Leu Cys  
500 505 510

Leu Ala Trp Leu Pro Leu Leu Ala Arg Ser Arg Arg Ser Ala Gln Thr  
515 520 525

Leu Pro Tyr Asp Ala Phe Val Val Phe Asp Lys Ala Gln Ser Ala Val  
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Ala Asp Trp Val Tyr Asn Glu Leu Arg Val Arg Leu Glu Glu Arg Arg  
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Gly Arg Trp Ala Leu Arg Leu Cys Leu Glu Asp Arg Asp Trp Leu Pro  
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Gly Gln Thr Leu Phe Glu Asn Leu Trp Ala Ser Ile Tyr Gly Ser Arg  
580 585 590

Lys Thr Leu Phe Val Leu Ala His Thr Asp Arg Val Ser Gly Leu Leu  
595 600 605

Arg Thr Ser Phe Leu Leu Ala Gln Gln Arg Leu Leu Glu Asp Arg Lys  
610 615 620

Asp Val Val Val Leu Val Ile Leu Arg Pro Asp Ala His Arg Ser Arg

625

630

635

640

Tyr Val Arg Leu Arg Gln Arg Leu Cys Arg Gln Ser Val Leu Phe Trp  
645 650 655

Pro Gln Gln Pro Asn Gly Gln Gly Gly Phe Trp Ala Gln Leu Ser Thr  
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Gly Pro Thr Ala Glu  
690